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ORIGINAL ARTICLES.

THE SO-CALLED THIRD TONSIL. ITS IMPORTANT RELATIONS TO NASO-PHARYNGEAL AND NASO-AURAL CATARRH.

Read before the Section of Laryngology and Otology, at the Fortieth Annual Meeting of the American Medical Association, at Newport, June, 1889.

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It would seem to be an unnecessary and superfluous task to present a paper on this subject before an assembly of specialists in nasal, aural and throat diseases, but as all our knowledge in medicine is the result of the aggregate experience of different observers, I would crave your indulgence whilst I add my mite to the general fund.

Much has been written of late years on Luschka's tonsil, adenoid tissue, lymphoid vegetations, etc., and whilst the fact that *deafness* sometimes results, especially in children, from any excessive accumulation of this formation, no particular stress has been laid on the active influence it exerts in the production and aggravation of naso-aural and naso-pharyngeal troubles, even when present in a slight degree only.

Whilst it may be true, as stated by so many observers, that the presence of glandular hypertrophy in the post-nasal space is the frequent result of a previously existing catarrhal condition of its mucous lining, my experience would lead me equally to the opposite conclusion, that the presence of this glandular hypertrophy, however produced, and however little, is an active agent in keeping up a more or less so-called catarrhal condition of the mucous lining of the post-nasal space, and its extensions into neighboring cavities, especially the ear. That this is true of nasal polypi, we all admit. They may be produced by a nasal catarrh, but once there the catarrh cannot be cured without their removal. This holds equally good of hypertrophied *faucial* tonsils even when only moderately enlarged. I have found, if I wish to get rid of a naso-pharyngeal or aural catarrh in the presence of enlarged tonsils, I must either remove or destroy this hypertrophied tissue as a means to that end. I have often been astonished at the rapid improvement, after this was done, of cases that had previously resisted all methods of treatment.

Even when there is no perceptible enlargement of the tonsils, I frequently find it necessary, as a means to the same end, to destroy what might be called the normal glandular tissue between the pillars of the fauces, especially when there is a constant, or, even occasional exudation of whitish secretion from the follicles, a condition generally known as "chronic follicular tonsillitis." In such cases it is my habit to introduce a fine galvano-cautery point, or chromic acid into the succulated follicle and set up adhesive inflammation.

The rôle played by the tonsils in the human economy is a question in considerable doubt, and the attempt of some writers to show that they are "leucocyte manufactories" has not had the support of demonstrative facts. There is no question of their having *some* function to perform, but we don't know its value or importance. We do know that the decided presence of this glandular tissue, whether faucial, pharyngeal or lingual is nearly always accompanied by some pathological manifestations, and that their absolute destruction is followed by no disaster to the individual, but in a very large proportion of the cases, by decided benefit.

Possibly, the so-called third tonsil plays a more important rôle in the production of aural and naso-pharyngeal troubles, with secondary laryngeal changes and reflex manifestations, than the faucial or lingual tonsils combined.

It is easy to understand how *deafness* may result from any excessive glandular hypertrophy, or, any great development of adenoid tissue at the pharyngeal vault, because it then acts practically as a *direct* impediment to the proper ventilation of the Eustachian tubes. This is sometimes the case, even where nasal breathing along the lower meatus is comparatively easy; but more frequently so, when the hypertrophy or tissue blocks the post-nasal openings as well. I have seen cases, as all of my hearers have also, where the post-nasal space was completely obliterated by masses of soft fungous tissue growing from vault,

back and sides, and projecting below the arches of the soft palate. One would suppose that such a condition of affairs would eventually lead to great and irremediable deafness, if these masses were not soon removed, and it is probable that it *might* do so, but it is not in accord with my experience.

I have seen quite a large number of cases of excessive development of this soft lymphoid tissue in the last ten years, but have never seen but *one case* where it caused marked permanent deafness, and that was in a man 48 years old, from whose history I should conclude that he had been in that condition all his life. The removal of the tissue, and the treatment of the resulting middle ear catarrh very much improved his hearing power, but his deafness was still quite noticeable. The cartilaginous mouths of the Eustachian tubes had been permanently deformed, and the palato-tubal muscles paralyzed by the long continued pressure, and their long inaction.

Paresis of the palate and palato-tubal muscles is one of the results of this condition, and may bring on, independent of any changes in the drum cavity or tube, what Weber-Liel long ago described under the heading of "paretic deafness;" and, the removal of the tissue should be followed by a course of electricity, to restore as far as practicable proper tone to these muscles.

Marked depreciation of hearing is nearly always present in these cases of great development of soft lymphoid tissue, but it is easily remedied by the ordinary treatment of Eustachian and tympanal catarrh, although I doubt if absolutely perfect hearing is ever restored. I have just finished the treatment of a young man 20 years of age, who has been very deaf all his life, from such a blocking up of the post-nasal space, and a three months treatment with removal of the tissue from vault, sides and back of the space has entirely restored hearing, although the resulting naso-pharyngeal catarrh is not yet cured.

We have, however, other forms of hypertrophy of the glandular tissue at the vault and sides of the post-nasal space. Instead of a mulberry looking mass, there may be only a small rounded projection from the vault, or a cone-shaped body with its apex downward, or two rounded lobules at either side with a marked sulcus between them, or several small knob-like outgrowths, or a flat cushion-like mass padding up the vaulted roof into a plane low pitched ceiling, and extending from side to side, and from front to back without obstructing the post-nasal openings. Sometimes these are composed of soft tissue easily removed, and sometimes they are dense and hard.

I have found that the Eustachian tubes are more especially injured by such a tissue when they are of a firm dense consistence than when soft. The resiliency or elasticity of the cartilaginous openings is seriously damaged by the pressure of these masses, particularly when they extend or grow *above and behind the tubes*, and the invariable accompanying catarrh of the naso-pharynx by extension to the middle ear adds to the impairment of hearing. Such cases I find more difficult of a *restitutio ad integrum*.

It is probable that the percentage of impaired hearing accompanying hypertrophy of the third tonsil is greater than we would suppose, because slight defects of hearing would most likely be overlooked by both patient and physician, and our statistics therefore only include cases where this defect has become clearly noticeable. If aurists would invariably look for such hypertrophy in all cases of middle ear disease, suppurative or non-suppurative; if rhinologists would always test the hearing power carefully, whenever they find such hypertrophy present, we would soon get accurate statistics on this subject.

Since I have made my "self-retaining palate retractor," I invariably use it in examining the post-nasal space of all cases that present themselves for throat, or middle ear troubles, and whenever I find any hypertrophy of the third tonsil I test the hearing with the result of having, at times, found commencing deafness not previously suspected. During the last eighteen months 565 patients have applied at my private office for treatment of naso-pharyngeal and middle ear affections, of whom 197 had disease of the middle ear.

Out of the whole number 134 had hypertrophy of the third tonsil, of whom 62 cases suffered with varying degrees of deafness, *i.e.*, 20⅓ per cent. of the total number showed such hypertrophy, and a fraction over 30 per cent. of these had middle ear complications.

Of these 134 cases, 29 had very large faucial tonsils, 54 turbinated hypertrophy, 18 deflected septum, 22 secondary laryngitis, 46 voice troubles, 1 had atrophic rhinitis. Nearly one-half were under 21 years of age, and 25 per cent. were over 30.

Cases seen at my clinic at the Richmond Eye, Ear, and Throat Infirmary, are not included in these statistics.

It seems to me that *this proportion of 20 per cent. in the whole number of cases* is a very large one, as compared with the reports of other observers. Possibly climatic influences may have something to do with the development of this form of hypertrophy.

The 30 per cent. of impaired hearing were all decidedly deaf to the watch and low voice, although in some cases the deafness was not noticeable in ordinary conversation.

A point of special interest, in these cases, is the large number of voice troubles and laryngitis resulting from the presence of this form of hypertrophy by lowering the roof of the pharyngeal vault, thus seriously interfering with its function as the resonance space for the voice.

This, of course, is no news to any of my hearers, but I doubt, if we all give this matter the attention it deserves. As far as my experience goes, I find that all persons who use the voice habitually, such as singers, actors, clergymen, lawyers, teachers, etc., have invariably some difficulty in a prolonged use of the voice if there is any thickening of the tissues at the pharyngeal vault, even when of very slight degree. The vaulted shape of this space should be perfectly preserved, and everything removed that alters it in any way if the resonance and timbre of the voice are to be retained.

Fifty-four cases had marked turbinated hypertrophy, and only one *atrophy* of the turbinated tissues, the only case I ever saw in connection with adenoid tissue.

Among my cases of naso-pharyngeal troubles with or without aural complications, I have found that the presence of glandular hypertrophy aggravated the symptoms and caused more excessive and annoying secretion, and that many of them suffered from almost constant *headaches*, especially if engaged in any occupation requiring close mental application. The excessive secretion and the irritation resulting therefrom to the surrounding mucous surfaces, prevents any benefit from local applications, or other treatment, unless the hypertrophy itself is removed or destroyed. In this way the third tonsil has a direct and deleterious influence on any previously existing catarrh of the naso-pharynx, and produces it where it did not previously exist.

It also in the same way *indirectly* produces or aggravates a catarrh of the Eustachian tubes, when its location is such as not to have a *direct* influence on the ear. When the adenoid tissue is present in such quantity as to cause nasal stenosis, so many ill effects result from the obstruction, that all writers are of accord as to the advisability of its removal, merely differing upon the method of operation. It is useless to here rehearse the consequences of neglecting to destroy it, but allow me to mention two results from this stenosis, as affected by the operation for removal of the tissue. One is anterior turbinated hypertrophy, which I find very frequently accompanies it, and which in a larger proportion of cases disappears spontaneously after the post-nasal space has been cleared.

The other is the occasional paralysis of the alæ of the nose, the *dilatores nasi* and the *compressor naris* becoming paretic, probably from non-use; and this result is a serious one, for, if of long continuance, I doubt if it is ever radically cured; at least whenever present, I have found it a serious impediment to the restoration of nasal breathing, even after the nose and post-nasal space were perfectly clear.

But whilst writers are in accord about the removal of the third tonsil, when its hypertrophy causes nasal stenosis, there seems to be a difference of opinion when this is only of slight degree; some advocating its entire removal; and others, regarding it as a normal appendage with some unknown function to perform, being of the opinion that it is best let alone.

Now, is the third tonsil so-called an essential normal appendage of the post-nasal space, or is its presence a congenital anomaly or the result of changes in the muciparous and follicular glands? I am sure the former question may be answered in the negative and the latter in the affirmative. I regard any tissue of any shape, whether pendent, rounded or flattened, that interferes with the vaulted aspect of the pharyngeal roof, as a congenital anomaly or a pathological formation, that ought to be removed or destroyed, because, even if it has not already brought about some naso-pharyngeal trouble, it will do so, sooner or later.

I so regard it, as, in at least 80 per cent. of the cases that have come under my observation for treatment of such troubles, there was not the slightest sign of any such formation as glandular tissue, the mucous lining of the vault being seemingly intimately adherent to the periosteum of the base of the skull. This mucous membrane has the same minute follicular and muciparous glands as the rest of the mucous lining of the throat, with a special aggregation of them in the location of Luschka's tonsil, so-called.

Any pathological process in these glands may result, as suggested by Dr. Bosworth, in sufficient thickening or hypertrophy, to change a microscopic into a macroscopic condition. The former is the physiological, the latter a pathological state. This process may be arrested with the slightest perceptible enlargement, or, go on to the development of soft fungous masses, adenomatous tumors, or even dense connective tissue growths.

With my self-retaining palate retractor in position, I have made numerous examinations of diseased and healthy post-nasal spaces, to look for some evidence of the *normal third tonsil* as also for the opening or mouth of the so-called *pharyngeal bursa*; as yet I have never found the former except in the pathological conditions referred to, and I have never been satisfied that I have found the latter at all, although I have occasionally seen and treated what might be the inflamed bursa, but which always seemed to me a dependency of the third tonsil and its pathological changes. Hence, I am still a skeptic about these parts being essential, *normal* constituents of the post-nasal space. I know I am a heretic in this respect, but crave that indulgent consideration which all true believers give to heretics on the ground of *invincible ignorance*.

Some twelve years ago in a transient visit to Dr. J. Solis-Cohen, he picked up a pair of post-nasal

forceps that he used for the removal of adenoid growths, and said in answer to some remark of mine about the danger of seizing the wrong tissues, that he considered anything they would grasp as legitimate prey. This statement fully represents my views at the present date, that any tissue at the vault which can be grasped by the cutting forceps should be removed.

I have found beneficial results follow the treatment of cases of post-nasal catarrh, after the ablation of all tissue at the vault, that had previously resisted every application.

In some cases the secretion is small in quantity, but is difficult to dislodge, and forms a small mass immediately at the vault, that soon emits an excessively disagreeable odor, as pronounced as that of ozœna.

Such cases I thoroughly cauterize with the galvano-cautery elcctrodes so as to destroy the glands that secrete the unpleasant exudation—as I find this the only method of doing away with this feature of the case. As to the methods of removal I think it matters very little how it is done, provided it is done thoroughly. Large masses of adenoid tissue are best removed with the galvano-cautery snare or the cutting forceps. So also of the dense hypertrophies spoken of above, but the use of the forceps is quite painful, even with a free application of cocaine.

Smaller hypertrophies, and that smooth mass of tissue so often seen lying in between the Eustachian tubes, and coming down just to the level of the superior arches of the post-nasal spaces, making a low pitched *flat roof* out of the *arching vault*, are best gotten rid of, by burning with the galvano-cautery points, or moxa-electrode, although it can also be partially removed by the forceps.

I have found my palate retractor an enormous help in such work, because the muscular movement of the palate never interferes with a perfect view of the parts whilst operating, and I have never seen a case I could not operate on with its aid, whilst without it I have often been baffled in obtaining a satisfactory view of the parts. In fact all post-nasal operations can be done better and more readily with it than without it, for it is easier to perform any surgical work by sight than to depend merely on the "tactus eruditus." I have latterly been enabled with its help to remove adenoid tissue in children 5 or 6 years of age, under the influence of cocaine instead of giving chloroform as I was formerly in the habit of doing.

CANCER OF TONSIL. REPORT OF CASE AND EXHIBITION OF SPECIMEN.

As malignant affections of the tonsils are comparatively rare, I thought the history of the following case would be of sufficient interest to report.

August 2, 1887, a gentleman, 58 years of age, applied to me for treatment of a throat trouble, which had been annoying him some months. The history he gave showed a gradual enlargement of the left tonsil with occasional pain until he had gotten into the following condition:

He could no longer eat solid food, and could swallow liquids only with difficulty. The pain occasionally was quite severe. His breathing was labored, and when lying down, especially if on his right side, he suffered from attacks of suffocation, that at times were very alarming. His articulation was so imperfect that it was difficult to understand him.

The examination revealed a large tumor springing from the site of the left tonsil, growing downwards so as to press on the epiglottis and almost fill the throat.

A laryngeal inspection showed paralysis of the *right* vocal cord, it being in the cadaveric position.

I removed the tumor by encircling it with a steel wire, and constricted it until its base was squeezed into a small dense pedicle. I then removed the steel wire and completed the operation with the galvano-cautery snare. The relief was immediate, both respiration and deglutition becoming almost normal. When the eschar came away, I destroyed the remains of the base with the galvano-cautery, and repeated this operation several times at intervals of some weeks until the parts had assumed a perfectly normal appearance.

Neither faucial pillar, nor any part except the glandular tissue between the pillars was involved, nor were the lymphatics implicated. The paralyzed vocal cord never entirely recovered.

Six months later I saw him again and there had been no return of the trouble. More than a year afterwards I heard from him, and he wrote that his throat was entirely well.

Part of the growth was sent to Dr. Jno. S. Billings, Curator of the Army Medical Museum in Washington, for examination, and the following report was received from Dr. Wm. M. Gray, the Microscopist: "The specimen of tumor received proves to be an epithelioma of squamous type; it probably started as *a papilloma* and degenerated into an *epithelioma*, as the cells are arranged like those in a papilloma, and are just beginning to infiltrate."

In March, 1889, my patient called on me again, suffering from dyspnœa and dysphagia. I found on examination that there had been a recurrence of the growth below and in front of the original site, involving the anterior faucial pillar, the base of the tongue on the left side, the glosso-epiglottic fold and extending down to the lower third of the pharynx. The tumor pressed down upon the larynx, pushing the epiglottis far over to the right side, and almost occluding the opening. He said the trouble had re-appeared about

two or three months previously and had developed with great rapidity.

With my galvano-cautery snare I removed as much of the tumor as possible, especially the portion pressing on the upper part of the larynx. There was great difficulty in encircling it, and I was obliged to resort to transfixion with large needles to enable me to do so. I passed a needle threaded with coarse silk as far back in the base of the growth as possible, bringing it out just in front of the epiglottis.

My cautery wire was attached to the thread and drawn through this opening. I then transfixed the anterior portion with a large needle, leaving it in position. The wire was hooked under each end of this needle passed through the canula, the current turned on and quite a large mass removed. This enabled him to breath easier and to take nourishment, and in a few days he returned home.

I told him that nothing but palliative measures could be made use of, and that possibly *a tracheotomy would become necessary*. In the latter part of April he returned in great distress, because of the violent pain, and much emaciated and weakened by the recurring and alarming hæmorrhages, and inability to take much nourishment. The growth had not perceptibly increased and the epiglottis was as you see it now. Strange to say up to this time the lymphatics were not involved, the left sub-maxillary gland alone being noticeable to touch. Two days after his entry into the hospital, he died very suddenly of heart failure.

A portion of the growth was sent again to Dr. Billings, and on June the 8th the following report was received from him:

"Dr. Wm M. Gray reports the specimen of tumor sent as a typical hard cancer (scirrhus). He also states that he has re-examined the first specimen sent from the same case, and adheres to his original report of squamous epithelioma."

The points of special interest about the case apart from the rarity of this form of malignant disease of the tonsil, are the development of a typical hard cancer of epitheliomatous structure out of a simple papillomatous tissue, and the fact that there was no implication of the glands of the of the lower jaw and neck even to the last, although all the other signs of malignant disease were present.

Dr. D. Bryson Delavan, of New York, said that he believed that the large percentage of cases of adenoid disease found by Dr. White was due to the unusual care exercised by that gentleman in the examination of his cases, and that many cases of slight hypertrophy not usually considered of pathological importance were actually productive of serious results, and therefore to be included. He preferred a solid uvula retractor to the skeleton instrument presented by the writer of the paper.

Dr. Jonathan Wright said: I have used Dr. White's retractor in perhaps a dozen cases, and, at least in my experience, it has provoked violent constriction of the pharyngeal muscles and made post-nasal examination by mirror very difficult and disagreeable to the patient. Under ether I should think it might well be used, as the pharyngeal muscles are more or less paralyzed. My inexperience with the instrument may have been the cause of my failures.

Dr. Mackenzie never uses the palate retractor, although it is easily conceivable that in certain cases its use may be of very great advantage. He has used Wales' method, but finds even by this process there is often gagging and salivation, which interferes with the operation. He asked how the retractor exhibited differed, except in weight, from that invented by Dr. Porcher?

Dr. Thrasher: In my operations on children for the removal of the third tonsil I invariably operate under chloroform and without a palate retractor, depending simply on touch. By this means the operation can be safely, easily and rapidly performed.

Dr. White, in reply, said that in the remarks made, except in those by Dr. Delavan, no reference had been made to the subject matter of his paper, the other gentlemen having confined themselves to an attack on his palate retractor. As far as he was concerned he preferred to use one, because he thought it easier for him and better for the patient that he should perform his operation with a perfect view of the parts, and not trust to his *dexterity* or his *sense of touch* to avoid an error. It was simply a question of taste, as there was no question of the fact that one could see better with the retractor than without it. In answer to Dr. Mackenzie's question about the difference between his retractor and Dr. Porcher's, he would say that in general principle all were alike, but that his own was lighter and worked in an entirely different way from all others, being adjustable or alterable for each patient, and the projecting bar in front turning out of the way of the operator by a hinge-joint. Moreover, its proper use required some experience in applying it, and with such experience the objection urged against it would probably fall to the ground.

Dilatation of the Stomach in Syphilis.—Dr. Jullien, of Paris, has observed a number of instances in which dilatation of the stomach developed in tertiary syphilis, and believes that it was in many instances the cause of nervous symptoms which were usually attributed directly to syphilis. Large doses of the iodide of potassium are, he thinks, not infrequently the cause of the dilatation.

DISCUSSION ON "THE INDICATIONS FOR, AND DURATION OF, THE TREATMENT OF SYPHILIS."

Read in the Section of Dermatology and Syphilography, at the Fortieth Annual Meeting of the American Medical Association, June, 1889.

The chairman, DR. BULKLEY, opened the discussion with a brief paper on

THE INDICATIONS FOR AND THE DURATION OF THE TREATMENT OF SYPHILIS.

The subject selected for our discussion this afternoon is one of very great practical interest, and one upon the decision of which, in individual cases, the very gravest consequences may rest. It is one which the physician cannot shirk if he would, and one upon which it often becomes his serious duty to decide and insist, even against the will of the patient. No one can tell what results may follow to the patient or others from an imperfect treatment of syphilis, and no one can measure the amount of harm which may be escaped by the intelligent and faithful performance of duty toward one who has become infected with syphilis.

The subject, together with the side issues to which it might lead, such as the innocent acquiring of syphilis, marital syphilis, hereditary syphilis, etc., is such a great one that it cannot by any means be compassed in a single discussion, much less can I attempt any considerable consideration even of its salient points. The most that I can hope for, in the brief time which should be taken by one opening the discussion, is to suggest certain points and lines of thought along which we may proceed, leaving the background to be filled by others.

Syphilitic infection takes place from the moment when the syphilitic virus is implanted upon a surface bereft of its epidermis or epithelium; or, in other words, as soon as the poison can be reached by absorbing tissue. It is not necessary for our discussion to consider, or even to know exactly, in what manner the infective material is taken up, although it probably enters the lymphatics at once; it is sufficient for our purpose to know that when once the virus has entered the system, the person is syphilitic, and if the course of the disease is not influenced by extraneous forces it will, in the large proportion of cases, develop in a certain manner, and run a more or less definite course, the natural history of which is now pretty well known and described. This course, beginning with the chancre or primary lesion, and followed by the various later manifestations, known as secondary and tertiary lesions, may extend over many years, and may result in greater or less permanent damage to the individual, and in addition may and does in certain cases destroy life.

In addition to the personal distress and danger to the person affected, we have also to consider the serious risks which are continually run from the infective nature of the disease, both in the more commonly thought of venereal contact, and also in the innocent relations of family, social, and industrial life; as well as in the matter of hereditary transmission, which is almost sure to occur during a certain period or stage of the disease. Unfortunately, the exact duration of this infective period is unknown, for although in many cases it seems to terminate in two or three years, in other instances the disease has been communicated from one to another even after the lapse of many years. Syphilis can be transmitted hereditarily long after its contagiousness appears to have ceased in other directions, and, as far as I know, no limit has been set, after the occurrence of infection, at which offspring may not exhibit, to a greater or less degree, some evidences of the poison having been acquired with their life. All this refers, of course, to untreated syphilis, or that which has been very imperfectly treated.

The other side of the picture is, however, most encouraging. Seen from the beginning and treated properly and faithfully for a sufficient length of time, and under the most favorable conditions, syphilis is easily manageable, need give but little trouble, further infection can be prevented, and, in the opinion of many, the disease is entirely curable. The evidence of its curability, as is well known, has been inferred or deduced from the fact that it can be acquired the second time, whereas the individual who is still syphilitic is not capable of reinfection.

Such, then, being the disease which we have to do with, it remains for us to discuss the subject before us, namely: "the indications for, and the duration of the treatment of syphilis." I do not suppose that it is necessary for us to enter at all upon the symptoms of syphilis or its manifestations, which are familiar to all, except so far as it may be necessary to allude to them in reference to the treatment necessary at the various periods of the disease; and we should rather confine our attention to the form of treatment best at different stages, and the duration of the same, and to the total duration of treatment requisite.

1. The first question for us to consider is, How early should the treatment of syphilis begin; when in the existence of the disease should we commence active treatment calculated to overcome and nullify the poison?

If the disease were produced artificially, as we vaccinate and so communicate the infectious disease vaccinia, or if the entrance of the syphilitic poison were absolutely known, it would seem proper to administer the antidote at once. But, of course, the syphilitic infection is seldom suspected and never known positively until the chancre or primary sore forms at the seat of entry, from ten days to several weeks after the date of

its entry into the system, and the question arises, when should treatment begin?

If there were surely only one class or variety of sores or abrasions known, on the genitals or elsewhere, and that were always the first manifestation of syphilis, there would be little or no question about the matter. But the difficulty of diagnosing these sores is proverbially so great that, unless I am greatly mistaken, every one has at times found it hard to decide just when to give constitutional treatment. Shall we wait, as has been advised, until other manifestations of the disease occur, upon the skin or elsewhere, in order to be absolutely certain of the diagnosis, or shall we begin at once when we have reasonable cause to suspect that the sore is due to syphilis? I leave this and other questions for your deliberation.

2. The second question which must arise to the practitioner's mind is, How long should the treatment be continued? Under active internal medication, and perhaps with the aid of some local measures the sore heals, and all hardness may disappear in a greater or less length of time. Possibly if all circumstances have been favorable, and the treatment has been energetic, there are none of the so-called early secondary manifestations of the disease: no lesions appear on the skin, the throat keeps well, and the hair does not fall. How long should the treatment be continued, and when can we be justified in pronouncing the patient quite fit to cease medical treatment? We are here supposing that the patient fully recognizes his condition and the dangers of the disease, is perfectly faithful to treatment, and is quite willing to abide by the decision of the physician. How soon can his medical adviser permit him to leave off treatment, with the assurance or expectation that he will have no further manifestations of the disease, cannot communicate it to others, and will not transmit it hereditarily?

3. If the patient be unmarried, the question is often asked, how soon he or she can marry after acquiring syphilis? As the answer to this depends largely upon the character and duration of the treatment carried out, it is one which may also well be considered by us in our present discussion.

4. When patients come to us after syphilis has become thoroughly established, and after it has exhibited one or many of its manifestations on the skin or elsewhere, what shall be the duration of our treatment? Shall we give remedies only until the lesions have disappeared or ceased to give annoyance, or shall a regular course of treatment be instituted, and if so, for how long a time?

5. It often happens that some years after the primary infection, possibly after there has been more or less of treatment, late lesions, generally gummy in nature, appear in one or another part of the body. What shall be our course in regard to them? Shall we simply give remedies until the obnoxious manifestation of the disease has disappeared, or shall we attempt to follow out a definite and continued course of treatment aiming at a more radical and permanent cure of the disease itself?

It would be possible, perhaps, to present many more questions for our consideration, but these, I think, cover much of the ground which often has to be mentally gone over by the physician facing a case of syphilis, and in regard to which he might not find practical aid in reference and text-books. These, therefore, are presented for discussion, in the earnest hope that the result of our deliberations may be both profitable to ourselves in settling our views in regard to the matters alluded to, and beneficial to our patients, in affording them, and consequently others related to them, more satisfactory and permanent relief from one of the worst diseases, when neglected or badly treated, to which the human race is subject, namely, syphilis.

THE POSITIVE DIAGNOSIS OF SYPHILIS, WITH SOME INTERESTING MEDICO-LEGAL TESTIMONY,

by EPHRAIM CUTTER, M.D., LL.D., of New York, was read by his son, Dr. J. A. Cutter.

For twenty years, a method of diagnosis of syphilis has proved so satisfactory that it is deemed positive and also a positive loss to those who do not use it. The mode of physical exploration is simple but delicate. A drop of blood just large enough to fill the space between an ordinary cover glass and an ordinary slide is obtained by puncture on the radial edge of the wrist, which is generally free from hair. Codman & Shurtleff, of Boston, make a scarificator (for the writers) which extracts the blood in a satisfactory way. The drop is transferred to the stage of the microscope, which must be good, to wit, for bacterioscopy. Fortunately good microscopes are more common than they were. If the light is properly adjusted and the observer is sincere and competent, as the syphilitic blood goes through its biological movements in dying, there will be seen here and there more or less numerous, active, automobile, sometimes saltatory, extremely minute globar bodies, called spores or microspores, micrococcus spores or bacteria, of the *Crypta Syphilitica*, which, when dancing or are put out of focus slightly, are copper-colored. The higher the power, the more distinct this color. With the $\frac{1}{8}$ inch objective of Tolles, the copper color has been found more marked than with any other power. Sometimes these spores will travel across the whole field. They are found in the serum spaces, over the red corpuscles and in the white corpuscles. In old cases, they are found in the urine and specially in the pus of chancres. These spores are the baby stage of the *Crypta Syphilitica*

(Salisbury). The fully developed form or parent plant is a cylindrical filament, slightly tapering, and is found in the blood in the form of short curved segments, sometimes slightly clavate at one end and in long strings or filaments, in coils, skeins, or comparatively straight. In the walls of chancres they are very curling and spirally twisted like the vegetative filaments of the plant in carbuncle. These crypta syphilitica filaments are also copper-colored when put a little out of focus. The mature plant is not so common as the infantile, which has the power of reproduction in its immature stage and of producing the physical and chemical influences of the mature plant.

The spores are to be distinguished from minute globules of fat whose motion can be seen by putting milk or fat emulsion under the microscope. They sometimes join in pairs like other bacteria, but not often. Their movements sometimes last twenty-four hours after withdrawal, if the cover is protected by the thorough drying of the blood around its edge. Fat globules do not travel across the field save when borne by currents of capillarity, in which everything moves with them. Fat globules will not travel in opposite directions as syphilitic spores do. They are also to be distinguished from the spores of vinegar yeast, *i. e.*, the second stage of development of tubercle bacillus, in the blood, by their want of aggregation and by their mobility.

Vinegar yeast spores occur singly, in pairs, triplets, and so on to massive aggregations which form emboli and, when detained in the lungs, tubercle. In the present stage of knowledge the spores of syphilis are unique in their active, saltatory motions and copper color. These few words are enough to suggest the line of research. The subject is more fit for the pathological or morphological laboratory than a lecture room. Should the sun be available and a proper dark room be found, the writer will project syphilitic blood on a screen and demonstrate the spores thereon with the morphologies of other blood for comparison.

In a late trial for murder, the suspect's clothes were submitted to the writer, apparently stained with blood which had been more or less washed by water. In the study of the morphology of this clothing, a list was made of the objects found under the microscope along with the blood as a matter of detail—not intending to use the foreign bodies as testimony. But the counsel for the defense in his cross-examination told the Judge that he would show that I was not an expert and that I knew nothing about the subject. He then asked, "What did you find in your examination?" Thus challenged the list was partially read, embracing a variety of objects which are not known to many. In the list was included syphilitic spores in active motion and enlarged white blood corpuscles which enclosed syphilitic spores. These attracted attention in and out of the court-room. Subsequently the physician of the murdered man testified that he was treating him for syphilis at the time of the murder. The jury hung, ten for conviction and two for acquittal. Just before the second trial a physician brought me a slide with blood which he said was taken from a patient whom he thought had syphilis. I found the spores in active motion. At the trial, this same physician was called to the stand, but was non-commital and got away as soon as he could. I was then shown the slide that he had brought to me, and on being questioned testified that I had found the evidence of syphilitic blood in it. It then transpired that a trap had been laid for me, for the blood in the slide was obtained from the prisoner. Still my evidence was positive, for a physician testified that he had treated him for syphilis. This time the suspect was convicted and sentenced for life.

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DR. CARL SEILER, of Philadelphia, inquired of Dr. Cutter the shape and size of the spores in question.

DR. CUTTER replied that he could not tell their size; he had not measured them. With 500 diameters the size was very small and varied from one to two, the same as blood corpuscles. Their movement was of greatest importance. Their shape was spherical.

DR. SEILER said he did not wish to intrude himself upon the Section as he was not a member of it, but the subject of Dr. Cutter's paper was one with which he had had a little experience. Ten years ago, at a meeting of the American Laryngological Association, Dr. Cutter had been asked by him the same question which he had just put to his son, and he had got identically the same answer. During that time the measurement and study of spores had vastly improved under

instruments of precision, and it seemed very strange Dr. Cutter had not taken the trouble to measure the bodies spoken of. Besides, it was a well-known property of broken up corpuscles in the blood to take on the movement and brown appearance described in the paper. He had no doubt the so-called spores of syphilis were nothing more than broken up blood corpuscles which danced up and down in the serum and gave a copper color. A strange fact in the presentation of the case was that the higher the power the smaller the cocci appeared. Generally the reverse was true.

Dr. Fleischner, of New Haven, feared that even if the observations made by Dr. Cutter were correct, they would prove of little practical diagnostic value to the general practitioner. Yet the thanks of the Section were due the doctor for his researches.

Dr. W. B. Mathewson, of New Jersey, remarked that if it could be definitely shown that this spore did indicate syphilis the fact would be of great value as placing the diagnosis on positive ground. But thus far, the connection between syphilis and the spore had not been traced. The discovery of the spore of syphilis had been repeatedly asserted. If he remembered correctly, Cornil had found this spore in only about one-third of the cases of actual syphilis. He had seen the spore himself frequently in blood examined, both in syphilitic and healthy persons. The trial to which the author had alluded showed, he thought, a recklessness in testimony of which the medical profession should never be guilty.

Dr. Root, of Hartford, thought the paper well worth consideration. He remembered that once the blood of some patients in a hospital in New York City had been sent to Dr. Cutter for examination, also some from the house physicians, and while the house physicians did not admit the truth to Dr. Cutter, yet to outside parties it was admitted that his diagnosis was correct in every instance.

Dr. E. N. Brush, of Philadelphia, said that about 1878 he heard Dr. Ephraim Cutter make similar statements when in Buffalo, and he attempted to confirm them by observations of his own. Perhaps his objectives were not of sufficient power; at any rate, he was unable to make out anything of diagnostic value. He found the so-called spores of syphilis in persons who surely did not have syphilis, and he failed to find them in persons known to be syphilitic. He did not wish, however, to throw any discredit on Dr. Cutter's work. Certainly if there were a bacillus or spore of syphilis it would be very desirable to find it, but it should be remembered that it had been looked for many years, that spores of various shapes and colors had presumably been discovered, yet his own work, and the better work of some of his friends in the profession, had failed to confirm the discovery.

Dr. Cutter said, in closing the discussion, that his father had simply desired to bring before the profession an easy and certain way of diagnosticating syphilis. If the sun were not obscured later he would demonstrate the spores with the solar microscope.

Dr. Carl Seiler, in discussing some of the points raised in Dr. Bulkley's paper, said that his experience with syphilis had been mostly limited to the treatment of its manifestations in the throat, consequently he knew very little about the chancre. He wished the opinion of the members whether it was good treatment to remove by surgery gummata when found in the mouth and nose. He had himself found that when the gummata were situated on the nasal septum, predisposing to stenosis, better results were obtained after scraping them with the curette and then going on with the usual treatment. In that way he obviated many of the difficulties consequent upon nasal stenosis, and obtained quicker results than without. Referring to a point raised by the chairman, he said that in his opinion, when local lesions of this kind existed they demanded both local measures and internal remedies. Quick measures should be used, such as the hypodermic injection of solution of bichloride of mercury. This he constantly employed until the lesions disappeared, and then placed the patient on mixed treatment for a considerable length of time afterward. He thought it bad practice to stop treatment as soon as the lesions disappeared. When asked what he considered sufficient time, Dr. Seiler replied about two years.

Dr. Corlett had been in the habit of giving the patient a placebo until it could be decided whether his chancre were a hard or soft one, not wishing to modify the disease by any remedy until a positive diagnosis could be made. During the past year, however, after reading Jonathan Hutchinson's report, he had somewhat changed his way of handling his patients, putting them upon mercurial treatment as soon as he thought syphilis was present. It was his opinion that the better rule was to wait until induration took place in the chancre and the lymphatic glands became involved before resorting to mercurial treatment. He would then place the patient on mercurial treatment and continue it for at least a year after all symptoms had disappeared. As to removal of the chancre, he thought it good practice when situated where its removal would not involve important parts. In the few cases in which he had seen it removed the disease ran a mild course afterward, which may have been due to the removal of the chancre. If a case presented itself before induration of the lymphatic glands he would most assuredly remove the chancre, if possible by the knife, if not, then by a strong cautery. On the glans penis the cautery would be preferable.

As to the medicine to be used during the second

stage, he believed the only drug which had the power of eliminating the syphilitic poison was mercury. It not only had the power of removing existing lesions, but of shortening the disease. Potassium salts would cause the lesions to disappear, but not were more prone to return. He quite agreed with Dr. Seiler, that it was necessary to continue the treatment two or three years, and at least one year after the symptoms had disappeared.

DR. GARLOCK remarked that iodide of potassium should be avoided in soft chancre; its effects were decidedly bad. He had found inunctions with mercurial salts very important in the treatment of syphilis, especially before the second stage, the symptoms of which it sometimes prevented from appearing.

DR. FLEISCHNER said the fact of the chancre being soft did not necessarily preclude syphilis. It was not uncommon to find a simple abrasion result in an ulcer and finally systemic syphilis become manifest, without there having been at any time local induration. The question of time of commencing syphilitic treatment might often be decided by the time which had elapsed between illicit intercourse and the appearance of the sore. A man who came to the doctor for treatment and acknowledged illicit intercourse would not be likely to mislead him with regard to date. If the sore appeared late, say twenty-one days after intercourse, he would not consider it necessary to wait for induration before commencing syphilitic treatment. Whether mercury were used by inunction or by injection, he thought made little difference. The latter mode probably gave quicker results, but that it was more effectual he could not see. As bearing on the duration of treatment it might be observed that some cases of syphilis terminated without treatment; they aborted. If, then, he subjected a patient to treatment and he responded very readily, why not, after a month's absence of symptoms, wait and keep watch? Was it necessary that an extra mild case be subjected to two years' treatment? He thought the treatment should be adapted to the individual case.

THE CHAIRMAN agreed in the statement that absolutely no hard and fast rules could be made for every case of syphilis. He also agreed in the remark that if a sore appeared at a given date, say a month, after a single illicit intercourse, syphilitic treatment might safely be begun, whether the sore was soft or hard: but in his experience patients usually had had intercourse at different times within a month or more, and they were likely to attribute a chancre to an intercourse of the previous week, whereas it dated from one of several weeks before. He called attention to a remark of Mr. Hutchinson which he had found of infinite value in diagnosis, namely: that the first chancre in the young man was almost always syphilitic. He had called the attention of students to that fact many times. A man entering his clinic and stating that it was his first chancre, he could usually assure them, although it had all the appearances of a soft chancre, that within a month or two the patient would show distinct evidence of syphilis. Dr. Bulkley did not believe, however, in a chancroidal poison which could be isolated as the syphilitic poison could be. He believed the patient lost in strength when treatment was postponed, and he therefore began it as soon as he felt pretty sure of his diagnosis. As to how long to continue it, he could not agree with Dr. Fleischner. It would be safer, he thought, to keep all patients under treatment two years, and there were many who should be treated much longer. He would, however, allow them to marry after six or eight months' freedom from lesions. He has never known one who acted on that advice cause infection or transmit the disease to the offspring. He believed that during late lesions of syphilis there was no contagious element in the blood.

COW'S MILK FOR INFANT FOOD.

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In India, several years ago, one of the Hindoo kings, "in order to atone for his cruelties, caused a colossal golden cow to be made, through the body of which he passed with profound reverence and made it the era from which all his edicts were dated."[1] This historical fact is significant. We have practiced all manner of cruelties with the luckless infant deprived of its mother's breast; we have presented all manner of unfit substances to this small animal, whose only language is a cry, whose only desire is food. In fact, whenever a commercial enterprise finds itself burdened with some waste product that cannot be put to other use, it has been deemed a good substitute for mother's milk, and straightway the market is stocked with another "baby's food," and plenty of physicians to recommend it and plenty of babies ready for martyrdom. Now how can the physicians of the nineteenth century better atone for all their cruelties toward the human young than by causing a better cow to be reared, and from henceforth base all their edicts on the artificial feeding of infants on this better cow with a better milk product? I think that, with few exceptions, we are all agreed now that nothing excels good pure milk from good healthy cows for the artificial nourishment of infants, and if the great body of physicians put themselves about it with anything like the same energy they have

[1] "India and the Hindoos," F. DeW. Ward, 1850, p. 34.

displayed in suggesting substitutes, they can so reform the breeding of dairy cattle and the handling of their milk that the suffering of the human young will be ameliorated to a far greater degree than was ever hoped for by the astute chemist who started out, years ago, to make not only a substitute for cow's milk, but also for that of the human mother.[2] It is this idea of a substitute that has led us away from the more important consideration of improving what nature has already presented to us. Just look at the improvement in the commercial line that the middlemen have made in their milk transactions. These men have reduced the purchasing of milk to a nicety hardly surpassed by the purchasers of gold and diamonds; they have worked down the price of milk from the producer to the lowest possible point; they have dropped fluid measurement and adopted weight as being more accurate; in butter factories they have invented an oil test that will indicate, in a very short space of time, the exact amount of butter a given quantity of milk will yield, and on this test the price of the milk is regulated; likewise the cheese factories have established a standard of solids in milk which also regulates the price. But all the improvements these men have made do not help us, notwithstanding the fact that our chemists, sanitarians and health authorities have followed in the wake of these men and endeavored to make us believe that the healthfulness of milk is dependent upon the total solids, fats, etc., that relate solely to its commercial value. A larger percentage of fat that is easily removed from milk does not improve it for our purpose; it matters very little to us whether a given quantity of milk contains 12 or 14 per cent. of solids.

In milk for infant feeding we should consider, first, the variety of fats, the manner in which they are emulsified and combined; second, the amount of albuminoids and their condition; third, the amount and variety of salts; fourth, the health of the animals from which it is derived and the food that has been consumed to produce the milk, and, fifth, the changes which the milk has gone through before it reaches the infant's stomach. When we come to understand all these conditions we shall readily perceive just what kind of milk we want, and exactly the kind of cow which, with a given variety of food, will produce the very best substitute for the infant in lieu of its own maternal breast.

Let us then first consider the fats. Taking the human milk, which should always be our standard, we find that these solids, according to the best authoritative analysis, occur in proportions of 2.11 to 6.89.[3] Now this makes an average of 4.131 for human milk. From several hundred analyses of cow's milk in different parts of France, England and America the average of the chemist is 3.91. Thus you will see the difference, according to the chemist, between the two varieties of milk is very slight. I know, however, from the actual experience of practical dairymen, that cow's milk contains more fat than is indicated by the above figures. The lowest amount of butter obtained from mixed milks is 1 pound of butter from 25 pounds of milk. This would make the fat percentage 4. In drawing this deduction I am well aware that a pound of butter is not a pound of fat, but a pound of butter obtained from a given quantity of milk represents a pound of fat in that milk, because the quantity of fat in a pound of butter is exactly 84 per cent., and according to the latest experiments at agricultural stations only 84 per cent. of the fat can be obtained from the milk by the process of butter making. Now this percentage of 4 is a low practical estimate of the quantity of fat, for among dairymen, with special breeding and feeding, they get as high as 1 pound of butter from 14 pounds of milk, that is, 7.13 per cent. This is a higher percentage than has been found by any chemist in human milk. This is a practical fact, not chemical inference. It is very easy to understand where the fault in chemistry has been. The fat in milk is dependent upon the food the animal receives more than are the albuminoids, and we all know that very many of the varieties of fat contained in cows' feed are volatile, and the chemical methods of using heat dissipate these varieties of fat; hence the low percentage obtained by chemists. We must all admit that the fats contained in human milk, the product of an omnivorous, largely carnivorous animal, containing fixed and more stable fats, differ from those contained in the cow, an herbivorous animal, whose food holds more vegetable, volatile and unstable fats. Practically one is a yellow, unctuous, pleasantly odorous fat, as we see in butter; the other is colorless, waxy, decidedly different in odor, and, therefore, it can be easily understood that the chemist, who is obliged to use heat, will recover more fat from the human than the cow's milk. Thus we see that the fat is largely dependent on the nature of the food, and from the dairyman we learn that we can regulate the food of the cow so as materially to affect the proportion of fat secreted. We know very little about the chemistry of fats; so far as I have been able to ascertain, there has been but one analysis of cow butter fat made up to the year 1875. Wherever we turn, the analysis of Bromeis confronts us, and later English analysts, while finding this

[2] "Now I have come to the most important matter of the lecture, and that is the consideration of the proposition at one time sincerely made of substituting some other food for human milk as being a better food for infants." Abstract of a lecture before the New York Academy of Sciences by Prof. Albert R. Leeds, Ph. D., of the Stevens Institute of Technology. "Sanitarium," May 24, 1883, p. 325.

[3] "Composition and Methods of Analysis of Human Milk," by Prof. Albert R. Leeds. Transactions of the College of Physicians of Philadelphia, third series, Vol. viii, p. 248.

analysis to be all wrong, are unable to give us a correct one. These later analysts,[4] without ascertaining the proportions, have found in butter, palmitin, palmitic acid, stearin, stearic acid, olein, oleic acid, butyrin, butyric acid, caproic acid, caprylic acid, and capric acid. The fat of human milk has also been analyzed by Robin, several years ago, and also copiously quoted. I think that it is due to us from the chemists that we have some authoritative analysis of these milk fats, that we may know which, if any, of the fatty acids are the mischief-makers in milk, for I have no doubt that the glycerides and fatty acids from the decomposition of milk have more to do with the development of the poisons than the albuminoids have. The present popular method of analyzing milk by heat undoubtedly decomposes the fats, as is evidenced by the skin that forms on the surface of boiling or evaporating milk. This skin is undoubtedly the oxide of lipyl; it was at one time considered that it was coagulated albumen, but it does not form *in vacuo* and will continually form on the surface of boiling or evaporating milk as often as you remove it, and resembles very much the skin which forms on old paint pots that have contained vegetable oil. Furthermore, the condensation of milk for commercial purposes does not preserve the fats; hence, condensed milks are more or less skimmed, the better varieties having only the more volatile fats removed, otherwise they would become rancid. I am coming more and more to consider that the fats in milk are the bodies most likely to cause the digestive derangements of infancy, and when we know more of the composition and combinations of these bodies occurring in milk, many of the poisons, notably tyrotoxicon, will be less of a mystery than they are now.

Our second consideration will be directed to the albuminoids. Some time ago there arose a mild dispute between two chemists as to the amount of the albuminoids occurring in human milk, Prof. Meiggs asserting that there was only 1 per cent., while Prof. Leeds makes the variation from 0.85 to 4.86, an average of 1.195. Kœnig, an earlier analyst, makes the variation from 0.57 to 4.25. Some of these results give as high a percentage of albuminoids in woman's milk as we find in cow's milk, and I have no doubt in my own mind that the time and habit of extracting the milk has a deal to do with the amount of occurring albuminoids. In other words, when milk is extracted every two hours or less it can not contain as much of the cell material as milk from the same source extracted at intervals of twelve hours. This latter is riper, and it is the non-uniformity of the tissue which causes all the difference in the different occurring albuminoids. We know that during the incubation of eggs casein is developed from egg albumen. This illustrates the ripening of albumen. Furthermore, take an egg just laid by the hen and boil it, and you will find immature albumen in it; that is, after boiling, instead of being thick and firm, like an older egg, much of it is milky. If boiled a few hours later all the albumen will coagulate perfectly, because it has had time to ripen. There is no doubt that the albuminoids in milk from healthy animals are all cell transformations, not an exudate, as are undoubtedly the fats and salts, because these latter we can influence by the food very plainly; but in health the albuminoids are constant without regard to the food, while during menstruation, pregnancy and other conditions, notably febrile disturbances, we find the fats and salts not materially affected, but the albuminoids are decreased, increased or totally changed, as we find in colostrum. The casein, besides being riper in cow's milk, by reason of its stronger growth, is intended by nature to coagulate into a hard mass, because it is the product of a cud-chewer for the nourishment of a cud-chewer, and the reason why it does not always coagulate in the infant's stomach, as it does in that of the calf, is that the latter animal's stomach secretes a principle called chymosin; this is the principle that curdles cow's milk, and it operates either in an acid or an alkaline medium. Pepsin will not coagulate milk, and hence the hard coagulum of cow's milk that sometimes forms in the infant's stomach is due to acidity of that organ, and this acidity is not always the fault of the stomach, but of the milk itself. The variations in the chemistry of the albuminoids found in cow's milk would not be surprising to any one if he could examine into the condition of some of its mammary sources, for often it will be found, on dissecting a cow's udder, which I always do when making an autopsy on a cow, that there are old cicatrices, one or more quarters of the udder intensely inflamed, sometimes a mammiferous duct clogged with a calculus or a clot of fibrin, and besides these pathological conditions the mammary gland is subject to benign and malign infiltrations, bacillary tubercular deposits, and eruptive diseases of the skin involving the gland and ducts; therefore, that fibrin, serum and albumen in various forms are found in the cow's milk is not surprising, and it can safely be assumed that any variation in the albuminoids from the normal casein can be ascribed to sickness on the part of the animal producing the milk.

We next come to the salts contained in milk, and it is remarkable how few analyses have been made to determine the salts or minerals that are contained in this fluid. Heidlin's analysis, copied everywhere, seems to be the only exhaustive one of the salines in cow's milk made during the present century. It seems to me in this case too that

[4] Hahner and Angell, "Butter, its Analysis and Adulterations." London, 1877.

ft is time for the chemist to teach us something more. There probably never was a time, in our era at least, when milk was attracting so much attention as now, and still all our chemists are content with the total solids, fats, albuminoids and sugar—just what the butter and cheese makers want to know. From this much-quoted analysis of cow's milk salts we learn that milk contains, in varying proportions, the phosphates of lime, magnesia and iron, the chlorides of potassium, sodium and iron, and free soda. Robin gets from human milk, in addition to the foregoing, carbonate of lime and soda, phosphate of soda and the sulphate of soda, and potash. We have no means of knowing how constant is the occurrence of any of these salts in milk, or under what conditions they are modified; we do know, however, from the experiments of Fehling, that many of the drugs administered to the milking female are excreted in the milk. Therefore, we can safely assume that the saline constituents occurring in milk are influenced both by the health and food of the animal. That the phosphates are craved for by the milking cow is evidenced by her habit of chewing old bones and the like, and that there is a lack of this element of food is not to be wondered at, when we see herds of milking cows pastured on old, worn-out lands. The practical farmer knows that exhausted pasture lands need, more than anything else for their rejuvenescence, the phosphates, and we know that in our nutrition we need them also. The land on which a cow is pastured will indicate pretty fairly what we may expect to find in her milk as salts. We have all noticed the excessive growth of sorrel on exhausted land, and can it then be a subject of wonder that some kind of a vegetable acid should be found in the milk of animals that are obliged to include this variety of food in their summer rations, and sour ensilage or spoiled brewery grains in their winter feed? Theodore Hänkel's discovery of citric acid in cow's milk, to the amount of 0.9 and 1.1 grams per litre, is just what might be expected.

Sugar, I think, in milk has always been overestimated as to its nutritive value, because we know that carnivorous animals do not secrete sugar to any appreciable extent, at least so the chemists tell us; and when we see a small slut nursing seven or eight puppies and keeping them all fat and in a thriving condition, we can easily imagine that sugar is not one of the necessary elements of food; while, on the other hand, we know that the gross result of condensed milk feeding, where the sugar is in excess, is not good. In regard to using the commercial sugar of milk as an addition to cow's milk for infant feeding, I think it is a mistake, as there are undoubtedly all the other crystallizable salts with the milk sugar, and, consequently, we can know very imperfectly what we are feeding an infant with when we are giving it milk sugar. If the milk from which the sugar was crystalized contained improper vegetable salts, these would undoubtedly become crystalized with the sugar, and many of the proper salts would have become changed to the lactates. Therefore, I think, if sugar is to be used at all, although I deem it of doubtful necessity, the pure cane sugar is undoubtedly the best, because you know just what it is. When we consider the chemistry of milk as we find it in the books, what does it all amount to? The chemist has given us to understand that the needs for bodily nourishment are a certain amount of the albuminoids, carbo-hydrates, fats and salts. We can, therefore, from some of the cheap cereals, make this ideal food, and for one cent have as much in nutritive value as we get in milk at a cost twenty or thirty times greater. Then why do we give milk? Because we have tried the chemist's ideal food with the infants at least, and however admirable the theory may be, in practice it is a failure. Nature does not make so close an allowance that there is nothing to spare and no margin. She does not measure food by the rule of three, always exactly in the same proportions. Let us examine the work of the chemists themselves, and we find in human milk a standard that we cannot ignore, the albuminoids varying from 0.85 to 4.86. Therefore, let us not deceive ourselves with the popular error of the day, namely, that milk must contain just such a proportion of solids, and solids not fat, and so forth, to a chemical nicety; but let us look into the cow-house and see what goes through the cow to produce the food for infants, and what kind of an animal she herself is. Prof. L. B. Arnold, as good an authority as we have in this country on dairy matters, says, "Milk is the scavenger of the cow's body." What would be the sense of taking a sample of water from a sewer and asking a chemist to examine it for sewage; and so, when we go into a dairy stable and see dirt and filth, disease and improper food, need we ask the chemist to ascertain the total solids, fats, etc., to find if the milk is fit for infant food? When this fluid will not properly nourish an infant, it is not the cow's milk *per se* that is at fault, but it is either a pathological condition of the cow, or improper food or care, or the conditions through which the milk has passed on its way from the cow to the infant. It is safe to say that if we had devoted the same attention to the cow, and if the same amount of money that has been spent on the various substitutes had been devoted to the improving of her condition, the infant, at least, would be better off.

Now we can assert that cow's milk is the best food for the artificial feeding of infants, and when this fails the fault lies in one or the other of the following conditions, or several of them combined: First, a faulty condition of the cow her-

self, and this will be indicated by the condition of the albuminoids; second, improper food or an improper manner of feeding and caring for the animal, and this will be indicated by the fats and salts; third, improper handling of the milk after it is taken from the cow, and this will be indicated by the ptomaines and extractives. A proper understanding of these three sources of danger will make the feeding of infants a simpler matter than that offered by any of the substitutes, and be, at the same time, a more rational method. We shall consider the conditions of the animal that render her milk unfit for food. The cow is a unique beast, differing in many respects from any of our other domestic animals. One of her peculiarities, that has caused a deal of confusion among veterinary writers, is her normal temperature. Several years ago I searched diligently in books devoted to bovine pathology to find the normal bodily heat of the cow, and the confusion was puzzling. It is variously stated at from 98° to 101° F. I myself made several hundred thermometrical examinations under varying conditions, and found that the temperature is not constant in apparent health, as it is, within very narrow limits, in the human subject. Of course we cannot tell to a certainty how near to health a dumb creature is. The standard we have to adopt with these animals is that they are in health when they perform their functions with profit to their owners. Certainly there are many slight ailments that do not carry the animal beyond this limit. Therefore, the varying temperature in the cow may be due to slight ailments that do not demand the attention of the veterinarian. The average temperature of the cow in apparent health I have found to be 102½° F., ranging from 101½° to 103°. This, you will perceive, is a peculiarity of the cow, and none of the other large domesticated animals maintain so high a bodily temperature. Another peculiarity of the cow is the constant employment of her generative functions. She is always milking or pregnant, and both the uterus and the mammary glands are employed almost constantly at the same time; hence her nervous functions are exaggerated. Therefore, with an abnormally high temperature—for I have found that bulls and steers have not so high a temperature as the milking cow—and with an unnatural functional activity of the organs of generation, she is used also as a machine to transform food into milk, and it is astonishing to what capacity she has been trained in this direction. With four stomachs, the first alone with a capacity of 60 gallons, she simply eats, and she will eat anything. In health she is always either eating or chewing her cud, and her pedigree sometimes shows the closest consanguinity in her breeding. Now, when we consider all these unusual conditions, is it at all to be wondered at that the ordinary dairy cow is, as a rule, an unhealthy animal, more prone to bacillary phthisis and scrofulous affections than other animals? Her nervous system is more subject to severe shocks, and, in fact, she is a delicate creature. Her attendants are not usually either mild or cleanly, nor is her housing always the best.

Our next consideration is the feeding and care of this nervous and delicate animal. The ordinary dairyman receives for his milk 1½ to 2½ cents per quart. At this low price received by the producer he cannot usually give his cattle just the best food. I noticed in a dairy journal this summer an estimate from the New York Dairy Commissioner. Taking the milk received at the creameries as a basis, the average income from each cow is about $25 a year to the producer. This is almost 7 cents a day, from which the dairyman has to buy food and pay for labor. This sum alone would not begin to pay for proper food for the animal; hence the farmer is driven to every known expedient to keep his cows in milk, and the profit being so small, if there is any profit at all, he must utilize every drop of milk, whether the animal giving it be sick or well. In this state of affairs, is it not natural that all the cheap foods, such as brewery grains, distillery slops, the refuse from starch factories, enter so largely into the food from which our daily supply of milk is produced. Of course this condition of low price and improper feeding does not apply to every dairy, but after years of experience I have no hesitation in saying that it applies to the great majority of dairy farms surrounding New York City, at least. I have personally inspected small dairies where the sole article of diet was swill gathered in the city. Good food is to the cows, of course, the prime absolute essential for the production of good milk, and unless the public are willing to pay more for their milk than they do at present, a reform in this direction cannot be expected.

The handling of milk after it leaves the cow is the next important consideration. Owing to the cow's natural high temperature, 102° to 103° F., the milk, when drawn, must cool rapidly, and this first cooling taking place in the cow-house, the milk is, of course, more or less affected by the conditions generating odors. If these odors are not very bad they can be removed, more or less perfectly, from the milk by a process of aeration. This can be accomplished either by pouring the milk from one vessel to another in a thin stream in the presence of a pure atmosphere, or on a larger scale by pumping pure air into it by a suitable machine. One of the most dangerous methods that I know of for killing the odors that milk absorbs from dirty stables or improper food, is that recommended by many practical and otherwise sensible men, namely, the addition of nitrate of potash, that is, common saltpetre. It is very

easy, from this addition of nitre, combined with the glycerides and sulphates already contained in milk that is decomposing, to figure out chemically bodies approximating to nitroglycerine. It is suggestively strange that the toxic effects of nitroglycerine are similar to those of tyrotoxicon. The often reported detonation of this latter extractive, while undergoing examination in the laboratory, is also suggestive of the properties of nitroglycerine. The addition of chloride of lime, which is also recommended for the same purpose, although apparently a less dangerous chemical compound, should, nevertheless, be prohibited. Soda is also added to milk sometimes to delay the souring process. The prohibition of this chemical may be viewed in the light of a stultification, when we consider the large amount of bicarbonate of soda that is used at the present day in one of the popular methods of feeding infants. I think it is no less reprehensible on the part of the physician than it is on the part of the dairyman. No chemical substance whatever should be added to cow's milk by the dairyman. Milk that is procurable too far away to reach the child within a few hours should not be used for infant feeding. The different degrees of temperature through which it must pass in its transit by country wagon, railroad train and city express are productive of changes that cannot but deteriorate the quality of the milk. It is well known that light, as well as heat, is one of the elements that hasten decomposition in milk; hence, the now popular method of serving milk in clear glass bottles is also a popular error.

No milk should be served by the milkman for infant feeding after it is twelve hours old, nor should it be served to the infant while it is warm, immediately after leaving the cow, for I have found by actual experiment that cow's milk, while still retaining the animal heat, if taken into the stomach, would coagulate into a solid mass; but this coagulum is not so hard and rubbery as the curd we see sometimes formed when milk is too old. In regard to sterilized milk, I am of the opinion that it is far better for us to make an effort to improve the quality of milk to such an extent that it will be needless to sterilize it, because, of course, sterilized milk must take its place with condensed milk and other varieties of preserved food. If we cannot improve our milk, then, of course, sterilization ought always to be practiced. Notwithstanding that it is a preserved food, like condensed milk, it is not necessarily skimmed or sweetened, as the latter is.

Having thus outlined the condition of the milk we get and the reasons why it is not always good, let me in the next place suggest remedies for the existing evils. First, in regard to the cow herself. No cow that is bred for a butter-maker should ever be used to furnish milk for infant feeding. The ideal butter-cow is too closely inbred and, consequently, too nervous; there is too much free fat in her milk. The ideal cow to furnish milk for our purpose should not be too finely bred and with little, if any, consanguinity in her breeding. She should not have had her first calf till she was in her third year; her milk should not be used after she is six years old, unless she has been spayed; she should be of a quiet disposition, her surroundings clean and quiet; she should be stall-fed always while giving milk for infants; her food should be hay without weeds, ground oats bran, flaxseed meal, roots (beets and carrots) bone-meal and salt—in the winter, cornmeal in addition, and in summer, in lieu of dry hay, green cut clover or grasses free from weeds. She should be curried daily and well bedded, and in winter the water she drinks should be slightly warmed. The milk should be aerated and cooled as quickly as possible. It should then be put into opaque bottles and securely closed.

Now, why do we not have this kind of cow and obtain this quality of milk from our milkman? The very first and prime reason is that milk is sold altogether too cheap. The producer, as I have before mentioned, gets about 2 cents a quart; the railroad or the carrier gets 1 cent a quart for all handled, and the distributor gets 5 cents a quart for peddling to the customers; therefore, the consumer pays 8 cents. This variety of milk does not usually agree with the child, and, therefore, the consumer is advised to buy some of the baby foods as an addition to the milk, and this increases the price of the food to something like 15 to 20 cents a quart. Now, if the producer got this extra amount of money he could buy better food and better cows, exclude the milk of sick animals, and altogether improve the quality of his produce. But would he do it? That is the question. Still, it would be more humane to make him do it when he is making a living, than under circumstances as they exist now. So the question of a purer supply rests very largely with the medical adviser. Instead of recommending commercial baby foods in addition to doubtful milk he should advise the parents to purchase milk at 12 or 15 cents a quart, and when the infant gets sick from digestive troubles then lay the blame where it is justly due, to the milkman, and he will lose his customer. The supply of baby milk in cities should be kept entirely distinct, and should be procured from those farms that are situated near enough to the consumer to get the morning's milk of the day of delivery. The dairies supplying this variety of milk should be under strict sanitary surveillance, for no matter how good a condition a cow may be in, if she is in heat, has sustained an injury, or is sick in any manner whatever, her milk should not be used for infant feeding until she has completely recovered. The ideal dairy for supplying infant food should be composed entirely of spayed cows,

and thus one constant source of nervous functional disturbance would be eliminated. In my own herd I have several spayed cows whose milk I supply for infant feeding. These animals are much more quiet in disposition, they give a more constant and uniform supply of milk, and seem to enjoy a more even degree of health than the cow who is occasionally bulling and becoming pregnant when giving milk.

DR. JOHN A. JEFFRIES said that he was much interested in Dr. Brush's paper, as he held the study of cow's milk to be very important. So long as our present customs remain, many children must be artificially fed, and cow's milk properly prepared is the best available substitute for the breast milk. By means of some mixture, such as Meig's, the milk can be made to more closely resemble human milk. It still remains that the albuminoids differ, and the same is probably true of the fats. The nature of the fats requires more attention, since some recent physiological work shows that the nature of the fat fed to animals affects the fat deposited in the system. He could not agree with the reader that cane sugar was better than milk sugar. The latter was now carefully prepared, was the natural food and was less easily fermented in the stomach and intestines.

As to sterilization, he thought it was very important. When milk only a few hours old was used he never had it sterilized, but if the milk must stand for some time before use it should be sterilized shortly after milking, before altered, in the country. The large number of children now fed on sterilized milk with the most happy results proved the value of the method beyond question. The three points in the artificial foods were a healthy cow, properly preserved milk, so modified as to resemble human milk.

DR. EARLY, of Ridgeway, said that while in the Pennsylvania Legislature during the pending of the pleuro-pneumonia bill he made an investigation of the dairies in the neighborhood of Philadelphia. He found many diseased cows among them, and in a stable at Camden, where six out of thirteen cows died, he found the owner selling the milk.

DR. CHRISTOPHER, of Ohio, was very much pleased with Dr. Brush's paper. He had recently made an investigation of the dairies of Cincinnati. In one dairy of great excellence he noted that the cows were thin. In distillery dairies the cows were fat. Thin cows taken there quickly fatten. Moreover, the urine of the swill-fed cattle was passed with great frequency and in large quantity, while that of properly fed cows was small in quantity and passed infrequently. Distillery cows give milk rich in cream and accumulate fat. This was without doubt a pathological condition resulting from deficient oxidation. This milk further undergoes decomposition with great readiness and is acid in reaction.

DR. GATES considered Dr. Brush's paper one of great value. In his experience lean cows are the best milkers.

DR. BRUSH considered Bordin's condensed milk as good as it is possible to make it, but no condensed milk can be made to contain all the constituents of fresh milk. It is preserved food and, as such, is open to the same objections as all preserved foods. Experience has shown that they do not properly nourish the tissues. What the difference is cannot yet be demonstrated, but there is something necessary for proper nutrition. Distillery-fed cows are not fat; the appearance of fat which they show is due to an œdematous condition. He has often made post-mortem examinations of such cows, and finds the tissues blubbery instead of composed of firm adipose tissue.

THE CLINIC.

A STUDY OF THE LOCATIONS OF 7881 PRIMARY CARCINOMATA AS ILLUSTRATING THE PROBABILITY OF A CANCEROUS MICROBE.

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[Reported for THE JOURNAL.]

Gentlemen:—It is not yet histologically proved that there is a cancer microbe. Prof. H. A. Johnson of this city, observed objects some years ago which he thought might be of this nature, and more recently Thomas, of Dorpat, and Scheurlein, of Berlin, have each discovered organisms which made a similar impression on their minds, but the final proof of their surmises is not yet forthcoming. To-day I wish to call your attention to some important clinical facts bearing on this subject which render a cancerous microbe a probability and, therefore, a proper object for search. True, these facts do not positively prove the conclusion, but they point so strongly toward it that they may be said almost to settle the question.

You are aware that many pathogenic bacilli and micrococci have their original existence outside of the human body; that their spores float in the atmosphere like inanimate dust, in a dormant condition, but when they light upon exposed tissues wet with animal secretions they spring to activity, show a swimming power, and traverse considerable distances, multiplying as they go and generating disease. If the cancer germ exists at all, its actions prove that it has these qualities.

You are also aware that all primary carcino-

mata begin in the deeper epithelial cells, close to the basement membrane. We sometimes speak of epithelial cancer, meaning a slightly modified form of the disease; but in a certain sense all primary carcinomata are epithelial; that is to say, they all originate in epithelium. A few eminent authors claim to have found true primary carcinoma in tissues deeper than the epithelial surfaces, but the cases are excessively rare, and I very much doubt the accuracy of the observations. Now, bearing these things in mind, allow me to lay before you certain clinical laws, and to follow them with statistics.

1. Other things being equal, primary carcinoma is most frequent on those surfaces which by their position would be most accessible to free swimming microbes or spores derived from without the body.

2. The liability to cancer is increased if the epithelial surface is so situated that the spores can remain upon it for at least some hours without being swept away, as on the lower lip; but the liability is greatly diminished if the parts are frequently swept off, as the globe of the eye by winking, or the œsophagus by swallowing food and drink.

3. The liability to cancer is great if the membrane has vast numbers of deep glandular follicles into which the spores can penetrate and lie free from disturbance and have direct access to the more delicate epithelial cells, as at the pyloric end of the stomach and the follicles of the mammary glands.

4. Those portions of the skin which are usually uncovered are oftener attacked than those covered with clothing and constantly brushed by its friction. The skin of the face, for instance, produces more cancer than all the covered portions of the integument combined.

5. As might be expected, there are a few seeming exceptions to these rules, but so few that they do not break their general force.

To make good these clinical laws I have, with considerable labor, made a collection of 7881 cases of primary carcinoma, gathering them from my own records and from extensive reports prepared on both continents, and I have tabulated them for your instruction. The first table shows the sources of my information and the number of cancers in each part of the body.

I omit all cancers of the lungs, liver and lymphatics, because these are almost all secondary. It is the primary cancer alone which is derived from without. The secondary ones are all mere infections from the primary.

First let us consider primary cancers of the alimentary canal, as given in the table.

The prolabium of the lower lip, though so small a surface, gives us the surprising number of about 481 carcinomata. In proportion to the surface exposed it develops more cancers than any other part of the body. The reason is not obscure. The lower lip is in such a position that vast numbers of germs from the air, from food and from drink may light upon it and lie there hours together without being dislodged. Finally the cracks and abrasions on it are very frequent from exposure to sun, wind and accidents, and from the pressure of the pestiferous stems of clay pipes, and these cracks, etc., furnish spots of access where the spores can reach the deeper epithelial calls. It is natural, therefore, to expect the disease at such a spot.

LOCATIONS.	Total No. of Cases.	From records in Mercy Hospital and in private prac.	From other American rep.	From Hosp's of London.	From Hosp's of Paris, 3 yrs.	From Imperl Hosp. in Vienna, 7 years.
Alimentary Canal and Appendages						
Lips (nearly all lower lip)	481	94	31	71	135	150
Tongue	196	17	25	53	62	39
Other parts of mouth	244	21	12	25	87	99
Salivary glands	30	5	2	. .	15	8
Œsophagus	59	1	41	6	5	6
Stomach	1,945	213	846	27	688	172
Intestines	127	1	14	5	52	55
Pancreas	22	. .	17	. .	5	. .
Rectum and anus	286	24	74	36	115	31
Genito-Urinary Tract.						
Penis	62	5	7	13	4	33
Urethra	4	. .	. .	. .	. .	4
Prostate gland	8	1	3	. .	2	2
Testes	62	16	6	4	14	21
Bladder	46	1	17	8	6	14
Ureters	. .	. .	. .	. .	. .	. .
Kidneys	43	1	29	5	4	4
Vulva	30	1	2	4	3	20
Vagina	25	. .	9	. .	. .	16
Uterus	2,308	252	553	82	1018	403
Ovaries	54	. .	44	. .	7	3
Eyes, Ears and Air-Passages.						
Eye-lids and conjunctiva	41	3	. .	. .	10	28
Ear	6	2	. .	2	. .	2
Nasal passages	3	2	. .	. .	. .	1
Larynx	16	. .	6	2	1	7
Epidermic Surfaces and Appended Glands.						
Face	327	44	80	2	131	70
Hands	39	8	8	. .	14	9
Surfaces of the body covered by clothing	191	37	35	57	17	45
Mammary Glands	1,232	170	260	154	316	332
Grand total	7,881					

Now passing inward we find the tongue, though presenting a larger surface, has less than half as many cancers as the lower lip; still it gives us 196 cases. Vast numbers of spores, after passing by the lips, may light on the tongue and lodge in the forest of papillæ or on ulcers made by ragged broken teeth. If they could remain there undisturbed they might find as safe a nidus as on the lip, but the constant friction of the organ in the mouth and the frequent baths of saliva may wipe and wash away most of the germs, so that attacks are less numerous upon it than upon the lower lip.

The salivary glands give us only 30 cases of cancer. The orifices of their ducts in the mouth are very small and few spores would find them. Then these ducts are swept out many times a day by swift currents of saliva, so that only rarely could a swimming microbe be expected to make its way successfully to the gland.

The other parts of the mouth present us with 244 cases, mostly beginning at the edges of the gums, where germs might lodge in the crevices between the gums and the teeth.

The whole mouth thus gives us 951 cases of cancer, a large number, but just what we would expect from an organ so situated as to be constantly receiving external microbes every minute of both day and night.

The œsophagus gives us only 59 cases. This is precisely what we should expect of an organ which is swept clean throughout its entire length by every mouthful of food or swallow of water. Of the few attacks that do occur the major portion are at the lower part, where the sphincter of the cardiac orifice often detains small portions of food for some time, and where the follicles of the mucous glands are deeper and far more numerous than in the upper portion, so that a lodgment of swimming germs is more likely to occur.

Figure 1.—Peptic gastric gland. (Gray.)

The stomach gives origin to 1945 cases, a startling array, equal to one-quarter of all the primary cancers of the entire body. I suppose this is mainly due to two causes. In the first place, whatever is swallowed remains there for hours; and, secondly, the mucous membrane of the stomach is honeycombed with many thousands of deep follicles, into which the germs have plenty of time to enter and obtain a permanent lodgment where they will be secure from being swept away. For a similar reason there is a difference in the susceptibility of the two ends of the organ. Most of the stomach cancers originate near the pyloric extremity, and correspondingly the follicles are deeper, more numerous and more complicated at that end. The stomach, therefore, is remarkably well adapted to give lodgment to microbes, and perhaps few men would escape the disease but for the fact that its secretions in a state of health are powerfully germicide, destroying not only the yeast plant and most other ordinary ferments, but also many pathogenic bacilli, including probably the cancer spores. It seems probable that carcinoma can attack the stomach only at such times as the secretions are below par in germicide power, just as in such circumstances the food may undergo acid fermentation, making a sour stomach, or even putrefy from the action of putrefacient bacilli.

Figure 2.—Glands at pyloric extremity of stomach. (Gray.)

It follows that probably very few cancer spores reach the intestines in a living condition, and we should expect primary carcinomata to be few in these viscera. Accordingly our table gives us only 127 cases. This small number is the more striking because the walls of the intestines present nearly ten times the area that the stomach does, and they are specially subject to irritations and inflammations of many kinds. However, as we approach the rectum and anus, where germs can enter from without, primary carcinoma becomes more abundant. The anus and lower half of the rectum, though constituting only a very small

fraction of the intestinal surface, give us 280 cases, or more than twice as many as all the rest of the intestines put together. This is one of the many facts which constantly tend to make the clinical surgeon feel that the carcinomatous infection comes from without the body. Another fact pointing the same way is this: Cancer of the upper half of the alimentary canal occurs far downward along its course, because the germs are carried along with the food and drink; but at the lower outlet primary cancer rarely originates more than three inches above the anus, because the downward motion of fæces prevents cancerous spores from ascending except in a few cases; hence the very striking fact that probably nine-tenths of all the primary carcinomata of this location are within three inches of the verge of the anus.

Figure 3.—Peptic glands of stomach after treatment with alkalies. (Frey.)

If we consider the male genito-urinary tract we find a similar condition. The penis furnishes us 62 cases, nearly all on the glans and prepuce, where germs can lodge and remain undisturbed, while the urethra, which is swept out by a swift current several times a day, only presents 4 cases. The prostate and the testes are, so to speak, terminal stations, and though many spores must fail to arrive there, yet those that do are safely lodged and can germinate undisturbed; hence we have more or less cancer of the testes, prostate, bladder and even kidneys reported. The figures for the testes are utterly worthless in most hospital reports because of an error in diagnosis by which a great part of the tubercles of the testes have formerly been reported as cancer; and as I have been unable to collect a sufficient number of cases which were proved by microscopic examination, I might have done well to omit that organ from the list, but after reflection I decided to retain it. Perhaps, also, I ought to have rejected the kidneys, for in most hospital reports a large number of cases both of tubercle and of sarcoma of these organs have been erroneously tabulated as cancer by careless pathologists.

In the female genitals the cancers of the vulva and vagina are few. These organs are not terminal stations and not specially subject to irritation; but the cervix uteri, presenting abraded spots in millions of otherwise healthy women, is a natural prey to any such swimming germs as we have supposed to be the cause of cancer. Hence carcinoma of the uterus is exceedingly abundant, giving us 2,308 cases, which is almost one-third of all the primary carcinomata of the body. It is noticeable also that almost all cancers of the uterus begin not high up, but at the cervix. Fig. 4 is a portion of the uterine canal twice the natural size, showing how completely it is honeycombed with follicles adapted to furnish lodgment to swimming spores. Fig. 5 shows the follicles more highly magnified, and displays impressively their adaptation to retain pathogenic microbes in their recesses.

Figure 4.—Uterine follicles enlarged two diameters. d d d, follicles; a a a, orifices. (Am. Syst. Gynecol.)

The mammary gland presents remarkable statistics. The number of cancers of the organ in our table is 1,232, the greatest number of any organ except the stomach and the cervix uteri. At first glance this seems contrary to the rule, for external spores can only enter through the nipple, and that is a small organ, covered and brushed with the clothing and often supposed to be dry, except during lactation. However, lac-

tation covers a good deal of a woman's life during child-bearing age. Furthermore, the orifices of the milk ducts, even when not lactating, are frequently moistened with a very slight exudation of mucus, and at other times with perspiration. For these reasons there is abundant opportunity for swimming spores to light on the parts and enter the interior. In active lactation they would be mostly swept out again by the rush of milk, but in the non-lactating periods they would make their way undisturbed to the follicles and find themselves eminently in a terminal station, from which nothing could dislodge them. The almost total absence of carcinoma from the male breast falls in well with this theory, as the smallness of the nipples and the tightness and dryness of the orifices of the milk ducts are almost an absolute protection from the admission of germs of any kind.

Figure 5.—Intra-uterine glands. e, epithelium; g g, glands; c t, connective tissue; v v, blood vessels; m m, sub-mucous layer. (Am. Syst. Gynecol.)

There is a striking difference in the liability to primary cancer between those portions of the skin which are habitually uncovered, as the face and hands, and those which are covered with clothing and habitually brushed off by its friction. The face and hands alone give us 366 cases, while the whole of the covered portions of the skin together furnish only 191 cases, as if the clothing served in some way to prevent the lodgment and development of germs by its protective and by its brushing action.

This liability of different surfaces to cancer in proportion to their exposure to germs, and their ability to afford them an undisturbed lodgment, is still more strikingly shown if we compare equal areas of the different surfaces. I have calculated the areas of the different organs and the proportion of cancer to the same area in all. Suppose the intestines to present one cancer on a given area of surface, then the number of cancers on the same area of other organs will be as follows:

Table showing the liability of equal areas of different surfaces to cancerous infection, the liability of intestine being assumed as 1:

Lower lip	8,448
Tongue	1,232
Rest of mouth and fauces	264
Œsophagus	242
Stomach	572
Intestines	1
Rectum and anus	396
Skin of the face	264
Hands	22
Surfaces covered with clothing	4
Vulva	264
Vagina	61
Cervix uteri	5,776

This shows that, in proportion to its area, the liability of the prolabium of the lower lip to cancer is 8,448 times greater than a similar area of intestine, while that of the tongue is 1,232, of the stomach 572, and of the anus and rectum 396, the rest of the intestine being only 1. The liability of the face is 264, while that of the covered portions of the body is only 4.

It has been conjectured by very eminent scientific men that cancer is a mere product of ordinary irritation acting upon epithelial tissue or upon certain masses of embryonic tissue enveloped in the body and accidentally left over undeveloped from the fœtal state, and that primary cancer attacks organs in proportion to the irritations to which they are subjected. There is a certain plausibility to this theory, but in fact it has never been proved that cancer has ever thus originated in a single instance; and, furthermore, the frequency of cancer is far from being proportioned to the amount of irritation in each organ.

There is one organ which is rebellious to every theory yet devised, my own included, and that is the Schneiderian membrane of the nose. It is extremely exposed to irritation and inflammation, and also to the reception of external germs of every kind, and yet it is rarely attacked with cancer. It is an organ standing by itself, so to speak, and possessing an exemption from attack which at present is unexplained.

Now, gentlemen, though the facts I have collected and laid before you point strongly to a probable cancer microbe, I wish you to understand that they only prove a probability, and not a certainty. Science is exacting. Before we can say that carcinoma is certainly caused by a germ, the following conditions must be fulfilled:

1. A microscopist must see the microbe.
2. He must obtain a pure culture of it.
3. He must reproduce the disease by inoculating the pure culture successfully into some animal. This has not yet been accomplished, but you and I may, nevertheless, observe the bearing

of clinical facts and note the probability where demonstration is not yet possible.

This probability brings with it important practical suggestions. If cancer is imported from without the body its invasion may often be prevented. In the breast, for instance, which furnished us with 1,232 cases, every germ must enter by the nipple, and it would not be difficult to prevent that. Bacteriologists find that a simple plug of cotton in their test tubes shuts out every foreign microbe. It would be easy to construct small concave cotton compresses, which could be worn as protectives on the breast. If desired, the cotton could be slightly dampened with glycerine to cause spores to adhere securely to the fibres, so that movements of the clothing could not cause them to sift through to the nipple. Additional security might be had by a thin rubber cap outside the cotton.

The stomach cannot be guarded from the entrance of microbes, but by attention to a healthy, moderate diet it may be kept in a condition to digest perfectly and to destroy most of the spores reaching it.

The cervix uteri can be cured of its dangerous abrasions, which probably furnish a nidus to the spores, and thus prevent it from becoming the seat of cancer. So in all parts of the body, such as the lips, the tongue, the gums, the anus, etc. If there are cancer spores in existence, cleanliness and careful preservation of the health and integrity of the surfaces will shut out the germs from the tissues which they are liable to attack.

You see, therefore, that I have a practical reason for wishing you to consider this subject, and that, acting wisely on the probability discovered, you may hope to prevent, in many cases, the onset of this disease.

No. 6 Sixteenth street, Chicago.

MEDICAL PROGRESS.

Fibrinous Membranes Within the Spinal Canal.—Dr. Joseph Wigglesworth reports three cases of general paralysis in which he found, *post mortem*, fibrinous membranes in connection with the spinal cord. In the first case the membrane was from one to two lines in thickness and was found lying upon the external surface of the dura mater on its posterior aspect. It extended from the third to the seventh dorsal vertebra and was attached both to the dura mater and to the walls of the spinal canal.

In the second case the membrane was similar to the foregoing one. In the third case it extended from the lower cervical to the lower dorsal region and involved the roots of some of the spinal nerves. It was everywhere coherent and could be detached as a separate membrane. The three membranes were all *external* to the dura mater, in which respect they differ from the similar formations which are frequently discovered in the cranium, especially in post mortems of the insane. Dr. Wigglesworth believes that the membranes described are the result of a hæmorrhagic effusion within the spinal canal; that an inflammatory process is not concerned in their formation, and that they would be discovered much more frequently if sought. In the third case he suspected the presence of the membrane before the death of the patient, on account of the symptoms of irritation of the spinal nerves which existed, to wit: retraction of the head and rigidity of the extremities.—*British Medical Journal*, September 21, 1889.

Morphology and Pathology of Nerve Terminations in Muscle.—Before the Paris Academy of Sciences, October 7th, Messrs. Babes and Marinesco reported their studies and experiments in the direction above indicated. The following is a brief *résumé:*

A modification of histological technique has enabled them to enter into an extensive consideration of nerve terminations in muscle. In examining a terminal plaque of the lizard with a strong apochromatic homogeneous immersion lens they observed two substances in the last segment of the axis cylinder. One is darkly and strongly colored by gold and stretches out in a network; the other, paler, of a fundamental character, seems associated with the pale substance of the plaque. The sheath of Schwann, spreading out, covers the plaque and becomes continuous with the sarcolemma. In the plaque the dark substance forms many sinuous ramifications communicating in arcades and possessing lateral branches terminating in crosses. In this substance exist many small rounded nuclei. It appears that the dark substance is continued throughout the plaque by the paler material which surrounds it. In the normal state fine lateral branches of the dark substance are rarely seen entering distant nuclei of the sarcolemma, while certain fine prolongations of the periphery of the fundamental material enter the intimate structure of the muscle. In man the structure of the plaque is comparatively simpler.

By cutting the sciatic nerve of the lizard we have determined an excessive atrophy of the muscle nerves and of the plaques, a breaking up of the network of dark substance, and a disappearance of the nuclei. We have repeated these experiments upon the rabbit on a very wide scale. Thirty-six hours after section of the sciatic nerve the lesion is more pronounced in the terminations than in the small peripheral muscle nerves. It consists of a nearly total disappearance of the dark network. In place of the ramifications dark

pyriform cellules are seen. The fundamental pale substance and the fundamental nuclei are quite visible. These nuclei are swollen, increased in number, usually rounded, and have a fine granular zone about them.

Most of the lesions found in maladies of the nervous and muscular systems correspond in general with the lesions experimentally produced. Thus, in simple muscular atrophy an atrophy of the plaques is found, sometimes with proliferation of the nuclei. In hypertrophy of certain muscles and in Thomsen's disease there is uniform hyperplasia of the dark substance. In typhoid fever there is found a simplification of the terminal plaque, and often the peripheral portion of the terminal fibre is replaced by a very fine filament. In the pseudo-hypertrophy of adults we have noticed a disappearance of the dark portion not only of the plaque, but often also of the terminal interannular segments. At the same time there often exists a proliferation of the fundamental nuclei. In a case of lateral amyotrophic sclerosis the terminal fibres and the plaques were extensively atrophied. In the multiple neuritis of Leyden we have in general determined the existence of the same conditions, but at the same time the signs of a new formation are seen, and sometimes even a proliferation of the nuclei of the plaque.—*Semaine Médicale*, October 9, 1889.

METHYL CHLORIDE AS A LOCAL ANÆSTHETIC.—DR. ERNST FEIBES, in a recent number of the *Berliner klinische Wochenschrift*, draws attention to the extensive and successful use in the Paris hospitals of methyl chloride as a local anæsthetic. Methyl chloride (CH, CL) is a colorless, easily liquefied gas, with an odor resembling that of ether and chloroform. The readiness with which the gas liquefies adapts it for convenient use, as it can be stored in a siphon, or in a bottle of any size specially constructed to conduct heat badly. It may be applied to any surface directly from the siphon, or as a spray, but this method is objectionable, owing to the anæsthetized area not being in most cases sufficiently circumscribed. Bailly uses the following method, which he calls "stypage:" Tampons composed of cotton wool, surrounded by a layer of flock-silk and then covered with thin silk, are saturated with methyl chloride, and applied to the part by means of wooden or vulcanite holders. After contact for some seconds the part gets pale and anæmic, and diminishes in sensitiveness. If the tampon be then removed there is marked reaction, shown by congestion and slight itching; but if the application be continued for a short time longer (a few seconds) the skin assumes a white, dried, parchment-like appearance. This is the time to operate. If you proceed further superficial necrosis may result. The application is sometimes succeeded by itching and an urticaria-like eruption. It is employed in all kinds of small operations—circumcision, opening abscesses, and in neuralgia, lumbago, muscular pains, gout, etc. In scraping lupus it is best applied by means of a camel-hair brush, as special parts can then be anæsthetized with perfect precision.—*British Medical Journal.*

TREATMENT OF PERTUSSIS WITH RESORCIN.—DR. JUSTUS ANDEER reports quite remarkable results in the treatment of whooping-cough with resorcin. In a child of 7 years, on the second day after resorcin was prescribed, there was great improvement in the symptoms, and sleep at night was much less disturbed. In ten days, the cough had disappeared. With five other children the effects were even more pronounced, all being cured within a week. An infant of 6 months with vomiting after each paroxysm of coughing, was relieved by the second dose, and in five days the cough ceased. In the latter case, Dr. Andeer used a ½ per cent. solution in sweetened water given from the nursing bottle. In the former cases, he gave a 2 per cent. solution in water, of which half a wineglassful was administered four times daily, with directions that part should be used as a gargle, the remainder swallowed. He does not think that inhalations, or painting of the pharynx, with this solution, possess any advantages over this simple method.—*Centralblatt für medicinischen Wissenschaften.—Medical News.*

TREATMENT OF CHRONIC CATARRH OF THE BLADDER.—DR. L. FREY, in the *Centralblatt für Chirurg.* of August 17, claims that iodoform is especially suited for the treatment of chronic catarrh of the bladder, on account of its antiseptic, analgesic, and deodorizing properties.

The bladder should first be cleansed by a douche of warm water, and then a tablespoonful of the following, in a pint of warm water, injected into it:

℞. Iodoform . . . . . 50 parts.
Glycerine. . . . . 40 "
Distilled water. . . . . 10 "
Tragacanth . . . . . ¼ part.
M.

These injections should be repeated every third day. Three or four will usually effect a complete cure.

Dr. Mosetig-Moorhof has treated twenty-three cases in this way, all of which were cured. No symptoms of intoxication from the drug were observed.—*Medical Age.*

QUININE IN PREGNANCY.—DR. E. A. G. DOYLE, Trinidad, W. I., finds that in the West Indies, where malarial fevers are common, abortion often results from the administration of quinine, writers entertaining an opposite opinion to the contrary notwithstanding. He has studied the question in all its bearings and is convinced that it is the quinine and not the fever that occasions the abortion.—*Brit. Med. Jour.*, September 31, 1889.

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SATURDAY, NOVEMBER 23, 1889.

PHTHISIS AND TUBERCULOSIS.

It seems that many of the enthusiasts of the microbic origin of disease, accepting the demonstrations of Koch on the origin of tuberculosis, would explain all the symptoms of pulmonary phthisis by the action of the same fungus. In tubercular disease in other parts of the body, such, for instance, as the large joints, the manifestations are quite different from tubercular disease of the lungs. There is no hectic, however great the emaciation, until the joint or large periarticular tubercular abscesses are opened and infected with pyogenic bacteria. This ought to draw attention to the fact that phthisis is not a simple disease.

In the examination of sputa from tubercular patients, every one has noticed the abundance of micrococci and non-tubercular bacilli. These observations have lately been attested by culture experiments. The tubercular nodules are for a long time free from pyogenic infection, and the inoculation of gelatine in these early cases from isolated tubercular nodules, whether degenerated or not, is without result, as the bacillus of tuberculosis does not grow on gelatine. When, however, the disease has advanced farther, the infection of the avascular tubercular nodule follows as the result of a capillary bronchitis or accidental infection, and night sweats and other symptoms of sepsis begin. Then the cultures show numerous colonies of pyogenic bacteria in the region of the tubercular nodules. Thus is established a condition resembling multiple abscess of the lung accompanied as a natural consequence with suppurative bronchitis. With the initiation of the pyogenic infection, the symptoms take on a graver character. Before there has been loss of strength from imperfect aeration of the blood and loaded action of the heart, now there is prostration from hyperexia, loss of appetite, night sweats and other results of sepsis. The dangers from pyogenic infection of the tubercular lung is scarcely less than that of the tubercular joint. This latter danger surgeons have long recognized. To be sure, the drainage of the lung is more complete and regular than that of any joint, so that there is less pronounced toxæmia.

The indications for treatment must be based upon a careful study of the conditions of parasitism. Until there is some form of medication which affects materially tubercular disease in joints or superficial lymph glands, there can scarcely be a satisfactory medication for tubercular disease of the lung. The administration of gases, hot or cold, seems like the application of a mad stone—irrational and irrelevant. When septic infection of the tubercular lung has taken place, the treatment cannot differ from that of septic infection elsewhere. The utter hopelessness of internal medication in such cases has been long recognized. There is nothing to be thought of which will benefit the patient except drainage, rest and food.

The proper indications for treatment point to the prevention first of tubercular infection, and when that is recognized, to the prevention of pyogenic infection of the tubercular lung. It seems *a priori* probable, as experience has shown it is possible, for tuberculosis of the lung, like tuberculosis of the joint, to remain in a dormant condition for half a lifetime, or even to disappear entirely under favorable conditions.

Here, then, is the climatic treatment of the tubercular lung disease. Put the patient in a dustless, and therefore aseptic atmosphere, and you have provided the most rational treatment. It is an antiseptic dressing to the open tubercular lung. The outdoor treatment of phthisis, or septic tuberculosis of the lung, long ago brought to popular notice by Felix Oswald, is also the rational treatment in this last and least hopeful stage of the disease.

CHILDREN AND THEIR TREATMENT.

Although the subject of the Treatment of the Diseases of Children is rapidly becoming one deemed worthy of careful consideration, yet there remains much room for more rapid improvement in regard to their discipline and the proper understanding of their needs, etc. Unfortunately, those who are entrusted with the training of the fathers and mothers of the future are rarely selected for their amiability, or capability of treating their little charges in a proper way.

This remark applies equally to parents and to teachers. Even among those who may be regarded as fitted by education and mental refinement for the care of children, it is constantly observed that there is an utter want of information upon many points in relation to the young, which frequently gives rise to very injudicious, even injurious treatment. Popular lectures can not deal with several of these points, and hence it becomes the duty of the physician to so instruct parents and teachers that they may do no wrong to the innocents in their care. Perhaps the one point upon which the most ignorance is displayed is the needed attention to the urinary apparatus. Incontinence of urine, a very common affliction of the young, almost invariably is regarded and treated as the result of laziness or even filthiness, and the unhappy sufferer is in many cases treated most barbarously to break him or her of the habit. It has happened that medical men who have no excuse save ignorance to err in this matter, have assured the parents that it was solely due to carelessness, etc., and have been the means of the infliction of discipline at which the soul shudders. Every physician who reads this should carefully think over the matter, and see whether he or she has erred in such a case. Were parents instructed that this is a misfortune not a fault, children who are thus troubled would at once be placed under medical treatment, and cured rather than be disgraced or heart-broken by shame and unmerited punishment.

This affection assumes another phase when the child so afflicted suffers the peculiar agony of strangury when denied the privilege of retiring when the call is imperative. Unfortunately, owing to the trickery of a few, all have to suffer. It should suffice if the parents inform the teacher of this condition of the child, and a request to retire should at once be honored. In some cases on the contrary, in place of strangury, the child when refused, at once loses control of the sphincter, and the contents of the bladder are emptied into the clothing. Either is extremely annoying to the child and liable to result in permanent injury.

Another affection incident to childhood is "night terrors." In many instances, these two are associated. Equally with the bladder trouble, has this affection been neglected or misunderstood. The child is regarded as wilfully perverse, or as having fallen into a bad habit, and is punished in a variety of ways according to the ingenuity of its "care takers!" We had better say "persecutors." Now if every physician would impress upon the mothers in his practice what is meant by "night terrors," no doubt many such cases would be recognized and placed under the proper treatment. There is reason to believe that in some cases, this affliction is liable to end in some form of dementia. For this reason also it is imperative that it should be attended to as early as possible and thus prevent so disastrous a termination.

In conclusion, while the profession are seeking all kinds of specialties at which to devote themselves, let all seek to inform themselves upon these very important subjects, with the assurance that thus they will truly be doing the work of "physicians."

THE AMERICAN ACADEMY OF MEDICINE.

The recent meeting of the American Academy of Medicine, held in Chicago on the 13th and 14th of November, was the first one ever held in the West. Established at Philadelphia during the session of the Centennial International Medical Congress in 1876, this Association has since that date been earnestly at work to promote some of the most important interests of the medical profession. Its immediate objects, as stated in its Constitution, are to encourage young men to pursue regular courses of study in classical and scientific institutions before entering upon the study of medicine; to extend the bounds of medical science; to elevate the profession; to relieve human suffering, and to prevent disease. As was well said by a former president of the Academy, DR. FRANK H. HAMILTON, the Society seeks "to

remedy a great and universally admitted evil, namely, imperfect preparation for the study of medicine and its almost inevitable sequence, imperfect qualification on the part of those who are admitted to practice." In pointing out the available means for accomplishing this purpose, Dr. Hamilton said that the Society should labor to create a healthy public sentiment which shall, in a measure, influence medical colleges and medical men; and that, most of all, it should strive to create a sound sentiment among the young men who contemplate the study of medicine, and who should have clearly pointed out to them the most valuable means of enlarging their future fields of usefulness as practitioners. The Academy is not intended as a substitute for any other association of medical men, but as supplemental to all organizations which have for their object the uplifting of the profession and the enlargement of its field of useful endeavor.

The present meeting was an occasion of much interest. The addresses were of a very high order of merit, and some of them, especially that of the President, DR. LEARTUS CONNOR, abounded in statistical facts that cannot fail to be of the greatest interest to medical men throughout the country.

EDITORIAL NOTES.

HOME.

THE JOHN CRERAR LIBRARY.—The will of the late John Crerar was admitted to probate in the City of Chicago on the 14th inst. After the bequest of over a million of dollars to various religious, literary and charitable institutions, and to many personal friends, he also provides for the creation and maintenance of a free public library to be located in the South Division of the city. The sum appropriated for this purpose is estimated at over two millions of dollars. The execution of this trust is committed to a Board consisting of men singularly fitted for the work—and the wishes of the donor, under such management, will surely be realized. It is to be hoped that with such ample means at its command, the board of management will not only develop a model library for the public, but that ample provision will also be made for the several professions as well. If this shall be done, in addition to the magnificant reference library which was the noble benefaction of the late Walter Newberry, Chicago, may soon become a literary centre, the advantages of which literary men will be quick to appreciate.

PUBLIC HEALTH MATTERS IN DETROIT.—Dr. Samuel P. Duffield, Secretary of the Detroit Board of Health, informs us that the State Board recently included typhoid fever as a disease dangerous to the public health and stated that according to the law it should be reported to the Health Officer. As there were certain points as to whether houses should be placarded or not, etc., the Detroit Board of Health held a session pursuant to a call from the President, Wm. Brodie, M.D., and the Board directed the following circular to be issued:

OFFICE OF THE BOARD OF HEALTH,
DETROIT, OCTOBER 15, 1889.

Dear Doctor:—Under the law requiring contagious and infectious diseases to be reported to the Board of Health, it is desirable that this Board be advised as follows:

1. Is typhoid fever in your opinion CONTAGIOUS?
2. Is typhoid fever in your opinion infectious?
3. Is typhoid fever in your opinion both contagious and infectious?
4. If typhoid fever is either infectious or both contagious and infectious, do you advise that although the law requires such diseases to be reported to the Health Office, that it should also be placarded as in small-pox, scarlet fever and diphtheria?

By promptly answering, and confining your replies to the above questions, and if possible attending the adjourned meeting of this Board in the Mayor's office at 7:30 P.M., Saturday, October 19, you will confer a favor upon the Board of Health.

By order of the Board.

WM. BRODIE, M.D., President,
SAMUEL P. DUFFIELD, M.D., Secretary.

There were 89 answers to 450 circulars sent out, and answers were as follows: Contagious: No, 60; yes, 26; in doubt, 5. Infectious: No, 14; yes, 74. Both contagious and infectious: No, 54; yes, 19; in doubt, 5. Placard: No, 69; yes, 20.

On the basis of these figures the Board directed the Secretary to notify the profession that the cases must according to law be reported, but that it was not necessary to have the house placarded, etc.

The form recommended by the United States Baggage Masters' Protective Association was endorsed by the Board. This form compels the undertaker to faithfully do his duty and swear to the same having been performed.

MEDICAL SOCIETY OF THE STATE OF WASHINGTON.—In response to a call by the President

of the Territorial Medical Society, there was a largely attended meeting of the profession at Tacoma, October 21st and 22d. The Territorial Society, as such, adjourned *sine die*. The formation of a State Society was then proceeded with, and the following officers were elected: President, Edward L. Smith, Seattle; First Vice-President, J. S. Wintermute, Tacoma; Second Vice-President, M. Pietrzycki, Dayton; Treasurer, H. S. Willison, Port Townsend; Secretary, C. L. Flannigan, Olympia; Board of Censors: Drs. Shaver, Heg, Crump, Boswell and Essig; Board of Trustees: Drs. Van Zandt, Van Buren, Merrick, Libby and Marion. The regular standing committees were also appointed. There are about sixty-five charter members of the Society. The next meeting will be held at Spokane Falls on the second Wednesday in May, 1890.

DISTRICT MEDICAL SOCIETY OF CENTRAL ILLINOIS.—The fourteenth semi-annual meeting of this Society was held at Decatur on the 12th inst., with a large attendance, over 100 physicians being present. Dr. Rauch, of the State Board of Health addressed the society briefly in the evening, on "City and Country Sanitation and its Relation to Contagious Diseases."

FOREIGN.

BERLINERS EATING HORSE MEAT.—A dispatch from London says that the consumption of horse meat in lieu of beef is daily increasing in Berlin, and it has become almost impossible for the butchers to procure sufficient genuine beef to supply the demand of those who are able to pay the almost fabulous price which that commodity commands.

FRENCH PHYSICIANS, it seems, feel the pulse of the people of France in more ways than one. Of the 557 members returned at the recent general elections to serve in the French Chamber of Deputies, 48 are doctors of medicine, 4 are druggists, 1 is a dentist and 1 a veterinarian.

THE late Father Damien, who died in the leper settlement at Molokai, Sandwich Islands, will be succeeded by his brother.

THE SCIENTIFIC GRANTS OF THE BRITISH MEDICAL ASSOCIATION.—The following additional grants have been made by the Council in accordance with the recommendation of the Scientific Grants Committee: Mr. Hankin £50 to continue his investigations into the nature of an albuminose that has been obtained from anthrax cultures under certain conditions; Dr. R. Kirk £10 for a research on alcaptonuria and on the distinction between albumen and mucin in the urine, and some other points in connection with proteids in that fluid; Dr. J. R. Bradford £15 for some experiments on the action of the cortex cerebri on the vaso-motor system; Dr. H. A. Ashdown £10 for a continued research upon absorption from the bladder.

THE MEDICAL PROFESSION AND TEMPERANCE.—The *British Medical Journal* says: An unusually large number of important temperance conferences have been held recently, including a National Temperance Congress at Birmingham. It is significant of the lively interest taken by members of the profession of medicine in the temperance movement that at Birmingham two metropolitan physicians and at Norwich a metropolitan physician and a distinguished provincial surgeon took a prominent part, while at Glasgow a leading place in the proceedings was assigned to the assistant of one of the university medical professors. A public meeting at Birmingham was addressed by several provincial members of our Association. The British Medical Temperance Association numbers over 400 members, all abstainers.

IS MAN LEFT-LEGGED?—Dr. W. K. Sibley read a paper before the British Association in which he argued that man was naturally left-legged. Standing working with the right hand, there was a tendency to balance on the left leg. Race paths were nearly always made for running in circles to the right, and the majority of movements (such as dancing, running, etc.) were more readily performed to the right. In walking, it was more natural to bear to the right; crowds as well as individuals did so. Troops started off with the left foot; the left foot was placed in the stirrup or step of the bicycle in mounting; the left foot was the one from which a man took off in jumping. From measurements made by Dr. Garson of the skeletons of the two legs, in 54.3 per cent. the left leg was the longer, and in 35.8 the right. From measurements of 200 pairs of feet, it was found that in 44 per cent. the left, and in 21.5 the right, was longer, while in 34.5 they were equal.—*Medical Record.*

TOPICS OF THE WEEK.

THE ITALIAN PREMIER ON STATE MEDICINE.

In his great speech at Palermo on the 14th of October, Signor Crispi gave special prominence to what his administration had effected for the sanitary rehabilitation of Italy. "For four years," he said, "there had weighed on Italians the incubus of an epidemic"—cholera, to wit—"which, besides physical suffering and material loss had induced a moral disturbance, inevitable, perhaps, in a country where hygienic education was still so primitive and so sporadic. It was a prime necessity, therefore, to proceed at once to the sanitary rehabilitation of the State, and we made provision accordingly. We addressed ourselves first to the minds of men, and we prevailed on them to look the enemy in the face as the principal means of overcoming it. With anxious and systematic care we took the sting from present evils, and then we reconstructed laws to obviate their recurrence. Sanitary provisions should impose on the freedom of the individual no restrictions but such as are required for the safeguard of the lives of others. Personal hygiene is on that account one of those salutary measures which we are entitled to exact." In cognate spirit the municipal services were unified and at the same time reformed throughout the Peninsula; "while," continued Signor Crispi, "we modified the constitution of the Sanitary Councils, so as to insure an earnest and an unremitting surveillance over the public health. We restored to its proper centre—the Home Office—the direction of the seaboard lazarettos, and by furnishing the chief ports of the kingdom with the means of precaution and defence, we established an outpost system to make head against the importation of disease. By degree and by law of favor (*legge di favore*), we assisted the minor communes in carrying out their sanitary rehabilitation—an opportunity of which already more than three hundred have taken advantage. By a modification and extension of the Bill, enacted for the benefit of Naples, the application of which to themselves was craved by some sixty communes, by considerately evoking and approving plans of house-reconstruction (*piani regolatori*) we have brought to the great cities the blessings of effective resanitation." Nor have more strictly medical reforms been neglected. "We have reconstituted," said Signor Crispi, "the whole vaccination service; we have revised the Pharmacopœia; and on the frontier towns, as a safeguard against epizootic invasion, we have brought up the the veterinary stations to military efficiency. We have wrought, in a word, the practical consummation of that sanitary code whose fundamental idea will prove not the least title to the love and veneration long earned from all Italians—whether surviving comrades, or of future generations—by that soldier of science, of fatherland, and of freedom, Agostino Bertani. Thus we may pronounce ourselves as on the true path of that sanitary redemption for which, not less than the political, Italy was yearning—a redemption of equal necessity, and certainly not less of a blessing. An Italy sound in a physical sense will yield us those vigorous arms which will fertilize her the best—those hardy constitutions which as living ramparts will prove her strongest safeguard." The "youngest of the Great Powers" is to be congratulated on the enlightened legislation set forth in these eloquent periods. It will henceforth be her duty to develop, as well as maintain, the sanitary reforms she has effected, and to justify in this respect the position she has earned in the European State-system.—*Lancet.*

WORK KILLS NO MAN.

From the Harveian Oration delivered at the Royal College of Physicians, October 18, 1889, by J. E. POLLACK, M.D., F.R.C.P., we quote the following concluding sentences:

I need not say to such an audience as this that *work*—the due exercise of every function given to us—kills no man and shortens no life. The causes are to be found in what is called our extended civilization. We are no longer traders to one country, nor for one or two commodities; but the telegraph has introduced us into a widened sphere, and our merchants have investments in every climate, and enter on risks of a kind so varied that the knowledge of no one man is sufficient to grasp it. Hence there are the anxieties of extended speculation, and a necessary want of the perfect understanding of each. The knowledge of one kind of trade was formerly "power," and led to prosperity; now we are playing games with all the world. Those who are present know well what part of the organism it is which generally fails under such pressure. The public say it is *brain*, but we know that it is *heart*—the motor power which Harvey studied, although, perhaps, he did not foresee to what pressure a modern civilization and struggle would subject it.

I have spoken but of the trading class and the speculative class, but all classes of society should learn to counteract in themselves the depressing agents of excessive worry, and to beware of the race which, once entered on, may exceed the best of our powers and ruin the machine.

RESULTS OF VACCINATION.

The opponents of vaccination in England, says *Science*, have of late been more active than ever; and as a result of their activity, a Royal Commissioner has been appointed, whose duty it shall be to make a full investigation of the whole subject and submit a report thereon. Friends of vaccination should welcome such an inquiry, as the method stands upon such a firm foundation of facts as to be able to stand the most searching examination. If it has not accomplished all that is claimed for it, the failure is due to insufficient or inefficient performance of the operation, and the sooner such abuse of it is made public the better. It is a rather remarkable coincidence that just at this time events should transpire at Sheffield, Eng., which show the value of vaccination. Small-pox has recently been very prevalent in that city. In a population of about 320,000 there have been 6,088 cases of the disease, of which number 590 proved fatal. Dr. Barry, who has made a report to the local Government Board, finds that the attack rate of the vaccinated

children under 10 was five in 1,000; of the unvaccinated of the same age, 101 in 1,000. The death-rates for the same classes were respectively .09 and 44. In every 1,000,000 of those twice vaccinated there were eight deaths; once vaccinated, 100 deaths; and unvaccinated, 5,100 deaths.—*The Druggists' Gazette.*

THE DEATH OF ISAAC E. TAYLOR, M.D.

We have received from the New York State Medical Association the following transcript from its minutes:

The Council of the New York State Medical Association sadly records its unfeigned sorrow for the loss of a valued founder, fellow and late president, endeared by his personal qualities as he was admired for his scientific attainments.

An illustrious name is transferred from the active list to the roll of honor of those who have bravely borne themselves in the foremost rank and fallen triumphant.

Untiring in industry, wise in counsel, affectionate in friendship, steadfast in religious faith, beloved by his associates and revered by the profession which acknowledged him as one of its leaders, Isaac E. Taylor lived an example for emulation by his survivors and successors, and rests from his labor, leaving a reputation unassailed by enmity and beyond the reach of jealousy.

By the Council,

JOHN G. ORTON, M.D., President.
E. D. FERGUSON, M.D., Secretary.

"ANGLO-AMERICAN VIENNA MEDICAL ASSOCIATION."

A meeting of British and American physicians was held recently at Vienna to consider the question of establishing an association for the purpose of furnishing all needed information to English-speaking medical men coming to study in Vienna. A large proportion of those now in the city were present, and it was resolved to start such an association, under the title of the "Anglo-American Vienna Medical Association." A committee of management was appointed, whose chief duty will be to supply information to newcomers on their arrival as to matriculation, medical courses, lodgings, etc., and, when necessary, to call meetings of the Association. The committee, on the occurrence of vacancies in their number through members leaving Vienna, will fill these up as soon as possible. The office of the Association will be at No. 12 Landesgerichts Strasse. It was agreed that membership should be open to any British or American physician or medical student on payment of an entrance fee of one gulden. Letters of inquiry, addressed to the President or Secretary, will at once receive attention.—*The Lancet.*

IMMUNITY AGAINST ANTHRAX.

The question of immunity against infectious diseases is the question of the day. In many bacteriological laboratories experimenters are working at that subject with varying success. Since Pasteur's first publication on preventive inoculation against cholera of fowl, *rouget*, anthrax and rabies, numerous experimenters have confirmed his statements, and the practical value of such preventive inoculations has now been abundantly proved.

The whole subject, however, is still in its infancy, for the way in which immunity is produced—the mechanism of immunity, to borrow Professor Bouchard's happy expression—is by no means clear. M. Pasteur, two years ago, in a letter to M. Duclaux, suggested that immunity against rabies in patients who had undergone his preventive treatment might be due to a chemical vaccinating substance secreted by the microörganism of rabies. There are many facts in favor of this theory, though unfortunately its truth has never been conclusively demonstrated.

In 1887, Messrs. Salmon and Smith showed that if a culture of the bacillus of hog cholera, after being sterilized by heat (58° C.), was injected into an animal, the latter acquired an artificial immunity against the bacillus of hog cholera, so that when the living microörganisms were injected they produced no symptoms. The demonstration of chemical vaccinating substances was not altogether satisfactory until Charrin, in the same year, proved that the introduction of a heated and filtered culture of the bacillus pyocyaneus protected rabbits against the inoculation of the living bacillus pyocyaneus. Roux and Chamberland shortly afterwards proved this to be true for malignant œdema, whilst Chantemesse and Vidal were able, by using a similar method, to protect mice against the evil effects of the typhoid bacillus. The experiments of the lamented Dr. Wooldridge on anthrax are also of the greatest importance, as showing the protective power of chemical substances.

The latest contribution to our knowledge of immunity is the paper by MR. E. H. HANKIN, in this week's number of the *Journal*. Mr. Hankin claims to have prepared from the cultures of anthrax an albumose which, when injected into mice or rabbits, protects these animals against the action of the anthrax bacillus. Mr. Hankin's experiments were made under the guidance of Professor Koch, at Berlin and, as far as they go, appear to warrant us in thinking that he has discovered an improved method of vaccinating against anthrax. We must wait for a full account of all his experiments, to enable us to form an opinion as to the practical value of his work, but its scientific interest will be at once evident.

Mr. Hankin concludes his paper by a series of conclusions which are rather suggested than proved by the facts he has published up to the present date. As his paper is only a preliminary account of his investigations, we must reserve further remarks until we are in possession of all the data on which his conclusions are based. —Editorial in *British Med. Journal.*

THE HOSPITAL BULLETIN.

The trustees of the Johns Hopkins Hospital have authorized the issue of a monthly publication to be known as the *Hospital Bulletin*. It will contain announcements of courses of lectures, programmes of clinical and pathological study, details of hospital and dispensary practice, abstracts of papers read and other proceedings of the Medical Society of the Hospital, reports of lectures and all other matters of general interest in connection with the work of the Hospital. Nine numbers will be issued annually. The subscription price will be $1. Subscriptions may be sent to the publication agency of the Johns Hopkins University, Baltimore, Md.—*Maryland Medical Journal.*

PRACTICAL NOTES.

THE INFLUENCE OF THE NERVOUS SYSTEM ON RENAL FUNCTION.

The *Lancet* gives an abstract of Dr. Francesco Spallitta's experiments, made with the view of ascertaining whether the effects produced on the renal secretion by lesions of the medulla oblongata are due, as held by Ustimowitsch, Heidenhain and B. Sachs, to the alteration of the blood-pressure caused by the lesion, or, as supposed by Eckhard, to some morbid change in the innervation of the kidney. The plan adopted was to cut through the spinal cord at various levels, and to watch the effect upon the secretion of urine.

In order to be certain that the urine found in the bladder at the necropsy was secreted after the spinal cord had been cut, a solution of iodide of potassium was injected under the skin after the operation, and the urine tested for iodine. The results obtained were as follows:

1. Lesions of the cord at the base of the first dorsal vertebra produce no changes in the renal secretion.

2. Sections at the seventh cervical and first dorsal vertebra permit the continuance of the secretion.

3. Sections at the sixth, fifth or fourth cervical vertebra allow the secretion to continue, but cause the urine to contain a certain amount of albumen.

4. Sections at the third or fourth cervical vertebra arrest the secretion altogether.

5. Electrical stimuli applied to the cord in the cervical region arrest the secretion entirely.

The theory which seems to Dr. Spallitta to accord best with these facts is, that the effect on the renal secretion of lesions of the cord is mainly due to the destruction of special nervous fibrillæ existing in the cord which govern the function of secretion of urine.—*Canada Lancet.*

TREATMENT OF SPRAINS.

It may be observed that a sprain is frequently treated with a liniment advised by physicians. It is, indeed, painful to see a physician writing a prescription for a sprain. There are but two indications in the treatment of sprains: 1. To provoke rapid absorption of the fluid effused around and within the joint; and 2, to favor cicatrization of the torn parts by immobilizing the articulation. Now, the modes of treatment hitherto in vogue do not fulfil these two indications. Massage would seem to present some real advantages, but it can be of little service in the case of severe sprains, and mild injuries would probably do as well under rest alone. An elastic bandage, the depressed parts being covered with a layer of cotton so as to prevent too great pressure over the prominence, and thereby causing sloughs, will meet the first indication, and by its use in procuring rest it will meet the second indication. This bandage acts like massage in promoting absorption, and also secures immobility of the joint. It is of equal service in sprains complicated with rupture of points of insertion, whereas massage would be productive of harm in cases in which splinters of bone were torn away. The practice of relieving the mind of the patient by giving him something to do in the way of applying bad-smelling liniments is a pernicious one, and really shows an unprofessional or unscientific attendant.

THE CONDITIONS OF INTRA-UTERINE INFECTION.

Infection of the fœtus before birth is a recognized fact, but it is, perhaps, too readily assumed that infective material may pass from the maternal into the fœtal blood by the normal channels of embryonic nutrition. Dr. Romeo Mangeri, of Catania, believes this to be impossible. As the result of wide study of the literature of the subject and of original experiments, he has come to the conclusion that no formed elements naturally pass out of the mother's blood into the fœtal circulation. Cinnabar, Indian ink, carmine, and other materials were injected into the jugular veins of animals advanced in pregnancy, but in no case could any trace of the substance employed for experiment be found in the fœtus. Passage of formed elements can only occur when the maternal placenta becomes diseased by inflammation, hæmorrhages, etc.; so that the walls of the villi are destroyed. Only under these conditions can septic or specific organisms pass from the mother into the blood of the fœtus.

EATING BEFORE SLEEPING.

A recent writer says that the view that brain workers should go supperless to bed is not good advice. Most medical authorities of the day think it wrong. It is a fruitful source of insomnia and neurasthenia. The brain becomes exhausted by its evening work, and demands rest and refreshment of its wasted tissues, not by indigestible salads and "fried abominations," but by some nutritious, easily digested and assimilated articles. A bowl of stale bread and milk, of rice, or some other farinaceous food, with milk or hot soup, would be more to the purpose. Any of these would insure a sound night's sleep, from which the man would awaken refreshed.

HEADACHES FROM ALCOHOL AND TOBACCO.

Dr. E. Lloyd Hughes recommends the following formula in headache from abuse of alcohol and tobacco:

℞ Spir. Ammon. aromat . . . . . f℥ss.
Spir. Chloroformi . . . . . mx.
Aquam ad . . . . . f℥j.
S.—At one dose.

SOCIETY PROCEEDINGS.

Medical Society of the District of Columbia.

Stated Meeting, March 27, 1889.

DR. S. C. BUSEY, PRESIDENT PRO TEM.

DR. ROBERT T. EDES presented a specimen and history of an

ENLARGED PROSTATE GLAND.

The patient was a man æt. 76, very corpulent, of excellent habits in early life, but of late years using a great deal of alcohol. In October, 1887, he consulted a surgeon in London for urinary trouble, and since that time has been constantly attended by a male nurse, who has used the catheter at intervals, usually of from two to three hours in the night, but sometimes considerably longer. He has had several attacks of hæmaturia, attended with fever, and in the intervals the urine has been profuse and purulent, but seldom ammoniacal. He failed gradually without any very marked new symptoms except increasing stupor but not coma, until shortly before death. After death the prostate was found greatly enlarged in all directions, and, in addition, the middle lobe stood up as a distinct tumor in front of the internal orifice of the urethra. In this neighborhood there was much congestion and ecchymosis, being probably the seat of the hæmorrhage. The urethra, through the prostate, was of full size, and an instrument could be readily passed. The ureters were somewhat dilated, and also the pelves of the kidneys. The secreting substance of the kidneys was but slightly encroached upon. The surface was somewhat granular, and they presented to the naked eye the appearance of fatty degeneration in patches.

DR. SMITH had presented a specimen some years ago resembling that reported by Dr. Edes to-night. It was an enlarged prostate and over 100 calculi were found in the bladder. An aged colored man was taken on the street with a desire to urinate, but could not. A physician passed a catheter and a profuse hæmorrhage followed. Dr. Smith was then sent for and found him suffering greatly from an inability to pass water. The bladder was distended and painful to pressure. It was with difficulty that he passed a catheter. Bloody urine was withdrawn and the bladder washed out. Some time after the man suddenly died, and at the post-mortem the prostate gland was found to be very much enlarged and there was a tear in the prostatic urethra.

DR. J. FORD THOMPSON: If the diagnosis could be made he preferred Harrison's operation. Such patients usually suffer, from time to time, from the obstruction, and there is probably some dilatation of the ureters. In such cases he would perform the median operation, puncture the bladder and remove the middle lobe of the prostate gland; or the same result could be accomplished by epicystotomy. He thought that complete excision would have cured Dr. Edes' patient. Much smaller enlargements would obstruct the flow, and excision would be advisable.

DR. EDES: There had never been any retention of urine in the case, and the man had seldom gone more than four hours without having his urine drawn with the catheter, as he had a constant attendant for that purpose.

DR. J. FORD THOMPSON presented a limb amputated for

ARTHRITIS OF THE RIGHT KNEE.

Sarah Pinn, æt. 12, colored; father living, mother dead, cause of death not known. The patient was well up to one year ago, when she fell and injured her right knee. After a day or so she experienced no trouble until February, 1888, when it was noticed that her right knee was somewhat larger than the left, and she also complained of pain when walking. Her knee gradually grew larger until her admission to the hospital, September 1, 1888.

Present condition: General health seems to be good and she has the appearance of being well nourished. Physical examination of knee shows it to be about as large again as normal. On palpation she complains of pain on the inner side and a little below the joint.

October 14—Complains of great pain in knee. Was given morphia sulph. daily. Slight fluctuation can be detected on outer side, just above head of fibula.

October 16—Patient was anæsthetized and an incision made over the knee joint, beginning just below the internal condyle of femur and passing anteriorly across the middle of the patella to a point corresponding on the outer side of the joint. The patella was then sawn through and the leg forcibly fixed on the thigh, which exposed the articular surfaces of the tibia and femur. The articular cartilages of the tibia were entirely gone and those of the femur so much diseased that they were removed with a saw. The internal tissues of the joint were extensively diseased and were all removed, including ligaments, leaving the posterior ligament intact. A thin slice of articular surface was removed by saw. After denuding the articular surface of the tibia the wound was irrigated with carbolic sol. 1–60. Two drainage tubes were then inserted with counter-openings above the knee externally and posteriorly. The denuded surfaces of tibia and femur were then brought in apposition and held by two silver wire sutures. After this the patella was wired together and the wound closed with six silkworm gut sutures. The leg was then dressed antiseptically and placed in a plaster case.

October 17.—Owing to the fact that there was considerable oozing after the operation the dressings were removed and carbolized water injected to check the hæmorrhage. It was again dressed antiseptically.

October 22.—Drainage tubes removed; general condition much better, but no evidence of union between the bones.

November 1.—General condition good; is gaining flesh.

December 1.—Patient not doing so well; has two sinuses in knee which discharges bloody-looking pus. Temperature is of a hectic type.

January 1, 1889.—No evidence of union between the bones.

January 15.—Patient was anæsthetized and a semi-lunar incision made across the anterior surface of the knee just below the patella. The leg was then fixed, as in the first operation, and the softened tissue around the joint all removed with a sharp spoon. The wound was then closed with six silver wire sutures, dressed antiseptically and placed in a plaster case.

January 16.—Has been no evidence of shock; patient in good condition.

February 24.—Plaster cast removed; still no union between the bones; temperature continues to be of a hectic type.

March 10.—Is loosing flesh rapidly.

March 26.—At a consultation held the following physicians were present: Drs. Lovejoy, King, Johnston and Thompson. It was decided to amputate the limb immediately. The patient being anæsthetized, the limb was amputated just above the condyles (Long anterior flap method). The stump was dressed antiseptically and patient put in bed.

April 2.—Dressings removed; nearly all of the flap has united by first intention; general condition and appetite good.

Dr. Thompson had referred to this case at the last meeting, and had said that he thought amputation would be necessary. At a meeting of the Consulting Staff of the Children's Hospital, held March 26, it was unanimously decided to amputate at once in order to give the girl the best chance of life. Dr. Lamb would present a section of the knee-joint at some future time.

Tri-State Medical Association.

First Annual Meeting, held at Chattanooga, Tenn., October 15 and 16, 1889.

(*Concluded from page 716.*)

Dr. Cooper Holtzclaw read a paper entitled

REPORT OF TWO CASES OF LAPAROTOMY, WITH A SPECIMEN.

Case 1.—Female, married, æt. 20. History of pelvic cellulitis two or three years previous, followed by ascites which was evacuated several times. Uterus immovable, tumor size of a hen's egg, to right of Douglas' cul-de-sac and in rectum, gut painful to touch and on defecation.

Diagnosis: Ovarian cystic degeneration. Laparotomy June 8, 1888. Both tubes and ovaries adherent to all contiguous tissues. As many adhesions as possible were broken up and diseased tissue removed. Recovery slow; at present date good health.

Case 2.—Female, æt. 19, unmarried. History: January 1, 1888, noticed small floating tumor in the right iliac region, which gradually grew larger until she was as a woman at full term; considerable dyspnœa, irregular menstruation, anorexia, emaciation; xyphoid cartilage dislocated and painful; uterus normal; urine normal; heart normal but rapid and weak. Diagnosis: parovarian cyst. Laparotomy October 1, 1889. Removed large sac containing 2 gallons of fluid and colloid substance; pedicle small, short, and attached to parovary. Patient discharged on fifteenth day.

Dr. J. F. Lynch, of Chattanooga, read a

REPORT OF A CASE OF LAPAROTOMY.

The patient was a widow æt. 35. Had been an invalid for years. The operation was performed for pyosalpinx, which was ruptured in the attempt to break down the extensive adhesions and its contents emptied into the abdominal cavity. After the operation the abdomen became fearfully distended by an accumulation of gas in the intestines. To relieve this condition teaspoonful doses of Epsom salts were given every hour, enemata of turpentine and asafœtida were administered, and a tube passed some distance up the rectum through which numerous injections were given. Gas continued to accumulate and, having exhausted all means of relieving the distension, Dr. Lynch feared intestinal obstruction, and was preparing to operate again when, in the afternoon of the fifth day, she had a copious action from the bowels and the distension disappeared. The operation was performed under strict antiseptic precautions. The patient has entirely recovered.

These papers were discussed by Drs. G. A. Baxter, R. J. Trippe and W. C. Townes.

Dr. Trippe related a case of ovariotomy of Dr. J. B. Cowan's. Cystic tumor of the right ovary in a woman æt. 25, single, domestic. Abdomen very much enlarged but symmetrical. Aspiration of a semi-solid, amber-colored fluid. The diagnosis of cystic tumor of the ovary was made, for which the doctors operated. A multilocular cyst of the right ovary was found, which was removed with the tube. Two of the cysts had been ruptured and it was estimated that there was 100 lbs. of fluid in the peritoneal cavity. The patient had

an uninterrupted recovery and was allowed to go out of the room in three weeks. She has remained well since and is earning her own living. He also reported a case in which he had performed laparotomy for stab-wound of the abdomen on a man æt. 38, in which the transverse colon was incised in two places. The incisions in the gut were oblique. There was an escape of fæcal matter from the wounds, which were stitched with catgut. The intestines had protruded from the wound and had got in the mud, and afterwards been covered with a blanket which had been used for dogs to lie on. The exposure had been for about an hour. The incision in the abdomen was closed with a three line suture. The next day there was a temperature of 101.5°, which lasted but a short time. The man was up in two weeks.

DR. FRANK TRESTER SMITH, of Chattanooga, read a paper entitled, *Report of a Case of Persistent Pupillary Membrane*. The paper was illustrated with a drawing. No treatment was recommended.

DR. REEVES asked if the condition might not be due to the result of an inflammation?

DR. SMITH said that it was possible, but that the inflammation must have occurred *in utero*, as there was no structure other than the pupillary membrane that would leave a grayish substance on the capsule of the lens with threads running to the anterior surface of the iris and attached to the circulus iridis major, as in the case presented.

DR. MAX THORNER agreed that no treatment was indicated and no other diagnosis possible from the description of the case. He related a case which he had seen in which an operation was attempted but the result was not encouraging.

DR. JAMES E. REEVES read the original account of *Ephraim McDowell's First Ovariotomy*.

In an omnibus discussion which followed the subject of hypnotism came up and was discussed by Drs. G. W. Drake, J. M. Heard, W. C. Townes, G. A. Baxter and R. D. Boyd.

After the transaction of miscellaneous business the Association adjourned to meet again in Chattanooga, October 21, 1890.

FOREIGN CORRESPONDENCE.

LETTER FROM PARIS.

(FROM OUR REGULAR CORRESPONDENT.)

Dr. Du Castel on the Treatment of Chronic Blenorrhagia—M. Chauveau on Transformism in Micro-Biology — Dr. Clado takes up the Question Whether the Liquids contained in the Herniary Sac should contain Toxic or Irritating Matters?

My letter in THE JOURNAL of August 3d last contains a note of Dr. Du Castel on the antiseptic treatment of blenorrhagia in its acute stage. I now forward another note by the same author on the treatment of chronic blenorrhagia. This note is the summary of a clinical lecture delivered by the author at the Hôpital du Midi, and which is of some importance owing to the experience acquired by him. After having tried a great number of medications for this affection, Dr. Du Castel has been led to the following conclusions: Internal medication, so useful in acute cases, has a very contestable action on blenorrhœa. The balsamics have appeared to be of some utility, but the mode of administration differs; it is no longer in high doses that they are administered, but in small quantity and during a long time. The veritable treatment of chronic blenorrhagia is the local treatment. According to the experience of Dr. Du Castel, the porte-caustic of Lallemand, the topical remedies applied directly to the mucous membrane by means of the endoscopic tube, as also the medicamentous bougies and sprays, have given certain results, but which appeared to him inferior means as compared with the current methods, injections, lavages and instillations. The two first therapeutic means are chiefly indicated in acute blenorrhagia, lavages appear more efficacious than simple injections, but they are of more difficult application. The solutions should be relatively concentrated; the caustic substances, such as the injection that bears the name of Ricord, or that of the three sulphates, are the most efficacious. As regards the antiseptic substances, they do not act so well as in acute urethritis. Of all the agents employed locally, instillations deserve the preference. As regards the solutions, those of the nitrite of silver produce a cauterization to the degree necessary to modify the mucous membrane; the strength of 1 to 50 parts often suffices. This is the method practiced by Professor Guyon which Dr. Du Castel has adopted, after having tried a great number of other means.

At a recent meeting of the Academy of Sciences M. Chauveau, the well known veterinarian, made an important communication on transformism in micro-biology, in taking, for example, the limits, the conditions and the consequences of the variability of the "bacillus anthracis." It results from the researches of the learned experimenter that, thanks to the persistence of the action of compressed oxygen on the cultures of the bacillus anthracis in course of development, one succeeds in creating races or types of less resistance than the primary bacillus, and which are particularly sensible to the influence of the attenuating agent which had procured for the bacillus its new properties. If this influence of the attenuating agent is prolonged, the new types lose the aptitude of vegetating in its contact. But, as long as the bacillus does not pass the limits of vegetability, it remains in the domain of pathogenic agents. It loses, it is true, all virulent property, but it preserves integrally the vaccinal

property and preserves it almost intact during the whole duration of its existence. These new characters are fixed and are easily entertained by culture in successive generations. Thus, in considering these types in themselves, without taking into account their origin, they may be regarded as forming one distinct species. It would not be impossible that the special types of the bacillus anthracis exist in nature with properties absolutely identical with those of the created races, and entertained in the laboratory.

In a memoir published in 1861, Prof. Verneuil emitted the idea that the liquids contained in the herniary sac should contain toxic or irritating matters. In 1867 he caused the contents of a herniary sac to be examined by Dr. Nepven, who found micrococci. At one of the sittings of the last Congress of Surgery, Dr. Clado, of Paris, took up the question. A man aged about 30 years, vigorous, and the subject of a reducible congenital hernia, was admitted into the Pitié Hospital with the signs of a strangulated hernia. He was operated on on the following day, sixteen hours after the commencement of the accidents. The temperature of the body was 36° C. at the time of the operation. Death took place one hour after. In the contents of the sac, examined immediately, there were found numerous bacteria, mobile, with which he made some cultures. These bacteria were found again the next day in the blood, the peritoneal serosity of the patient, and in the incisions made in the viscera (the spleen and the lungs). In the strangulated knuckle there were the same microbes as in the glands, the blood-vessels and lymphatics. The cultures furnished one special bacterium, which, cultivated at 28° C., proved to be inoffensive, whereas when cultivated between 37° C. and 40° C., it becomes mortal in a few hours. The inoculation of the blood of the patient produces the death of animals in a very short time. In fine, the inoculation with the serosity or with the blood of animals caused death in series. The microbe proved itself particularly pathogenic for the guinea-pig and the rabbit. In the dog it produced vomiting, inappetence, followed by complete recovery. The bacterium multiplied itself with astonishing rapidity in the organism of the animals. To explain the cause of death, particularly rapid death, in cases of hernia, nervous exhaustion was suggested, the constriction of the filaments of the great sympathetic nerve, the overdistension of the abdomen with gas, visceral congestion, particularly of the lungs, finally stercorhæmia. Dr. Clado explains death in strangulated hernia by the penetration into the economy of a bacterium having for its starting point the surface of the intestine. Visceral congestions, frequently observed, are the result of the localization of the bacteria in the viscera, and particularly in the lungs. Herniary peritonitis and generalized peritonitis without opening in the intestine are the result of the migration, through the intestinal pariety, of the bacteria into the peritoneum. Dr. Clado admits that the distension of the intestinal knuckle by gas pushes these microbes into the thickness of the ulcerated mucous membrane.

A. B.

DOMESTIC CORRESPONDENCE.

"Professional Organization."

To the Editor:—Your editorial of September 28th on "Professional Organization" is not likely to be without a response from the many physicians whom it concerns. This is the age of organizations, and while every true member of the medical profession would decry an association having for its chief aim the selfish advancement of the individual or a favored few, yet we all have a right to urge that which will bring the members of our guild into closer relationship.

For many years the American Medical Association has stood, in numbers and importance, far beyond any other; but now we have new organizations which, though they may never rival the national body, are yet representative and growing larger each year. These societies, it seems to me, are midway in the large distance which lies between the American Medical and the State associations, and are composed mainly of men who are members of both.

These district societies are well organized and are sure to continue. The question to be answered is, shall their interests and that of the American Medical Association be united? That such union would be of mutual advantage seems apparent for several reasons.

1. As already suggested, a better system of collective investigation of disease could be instituted.

2. Questions which cannot fully be discussed in the American Medical Association, for want of time, could be referred to one of the branches. This could be well done where questions arise pertaining to variations of disease peculiar to certain latitudes or geographical sections.

3. THE JOURNAL of the Association would, by the adoption of some such plan as suggested in the editorial referred to, be strengthened and become even more than at present the representative national journal.

4. There would be a better union and closer fellowship among the members of the different societies, many of whom are unable to attend the American Medical Association regularly.

Possibly five branches might be formed, one in New England, one in the Middle States, another in the South, and one on the Pacific coast, while the Mississippi Valley Medical Association could

easily represent the territory implied by its name. There is strength in the very thought of such a wide-reaching organization. At the national meeting and its branches we can have each year a registration of 10,000 physicians as easily as we now have one-fifth of that number.

It seems to me that, in justice to the thousands of physicians in America, as well as for the best interests of the American Medical Association, this question should be thoroughly discussed.

Respectfully,

WM. PORTER.

St. Louis, November 12, 1889.

BOOK REVIEWS.

DISEASES OF WOMEN. A Manual of Non-Surgical Gynecology Designed Especially for Students and General Practitioners. By F. H. DAVENPORT, A.B., M.D., Assistant in Gynecology, Harvard Medical School; Assistant Surgeon to the Free Hospital for Women, Boston, etc. With 105 Illustrations. Octavo, pp. xiv, 292. Philadelphia: Lea Bros. & Co. 1889.

In this modest volume the author has endeavored to set before the student the elementary principles of the methods of gynecological examination, together with the simple forms of treating the most common diseases of the pelvic organs, and to assist the general practitioner in understanding and treating the gynecological cases of his everyday practice. Surgical gynecology and pathological anatomy have been omitted, for the most part, with a view to make room for a description of many minor points which are often wanting in other works. It is not too much to say that the author has carried out his plan in an admirable manner, with the result of producing a thoroughly practical and useful work which, while it commends itself particularly to the beginner, contains much of value to the practical gynecologist; thus his chapter on "Displacements of the Uterus," which includes the methods of diagnosis, the use of the probe, and the instructions for measuring the vagina and applying pessaries, would do credit to a very much larger and more pretentious treatise. The work is certainly a very attractive one, and is of a character to encourage the hope that another and enlarged edition will soon be required.

TRANSACTIONS OF THE LOUISIANA STATE MEDICAL SOCIETY, held at New Orleans, April 9, 10 and 11, 1889.

The report of the work done by the Louisiana State Society for the past year speaks well for the earnestness and zeal of its members. The papers read were numerous, interesting and varied in character. Three of the most extensive papers were read by Dr. Joseph Jones, who discussed at length the subjects of the care of the insane, the relations of quarantine to commerce and the action of antipyretics in febrile diseases. These are notable papers and deserve a careful reading. Interesting contributions to surgery were made by Dr. R. Matas on "Multiple Subperiosteal Sarcoma of Skull" and "Circular Enterorrhaphy;" by Dr. G. B. Lawrason on "Two Cases of Hysterectomy;" and by Dr. E. Souchon on "The Drilling of Capillary Holes through the Skull for the Purpose of Exploration with the Hypodermic Needle."

SAUNDER'S QUESTION-COMPENDS, NO. 1, ESSENTIALS OF PHYSIOLOGY. Arranged in the form of questions and answers; prepared especially for students of medicine by H. A. HARE, B.Sc., M.D., Dem. of Ther. and Instructor in Physical Diagnosis in the Univ. of Penn., etc., etc. Second edition, revised and enlarged; pp. x, 193. Philadelphia: W. B. Saunders. London: Henry Renshaw. Melbourne: Geo. Robertson & Co. 1889.

While open to many of the criticisms which assail medical compends designed for students, this little work is deserving of much praise as being a very excellent one of its class. Students no doubt often abuse themselves by doing superficial work and glossing over their real ignorance with a little of the more easily acquired knowledge; but, nevertheless, if properly used such books may be made to greatly lighten the tasks of the already overburdened under-graduate. We do not hesitate to pronounce this such a book. Not the least of its many excellencies is the admirable selection of the illustrations, which are uniformly above reproach both in accuracy of design and mechanical execution.

TRANSACTIONS OF THE IOWA STATE MEDICAL SOCIETY. Vol. VII, 1886–1889.

This volume of Transactions covers the work done by the Society in four years. It comprises sixty-one papers, nearly all of which may be said to be rather meagre, as may be judged by the fact that they find plenty of room in a book of only 564 pages. The work accomplished is very good as far as it goes, but the Society evidently needs tonic treatment to prevent premature decay. From such a magnificent State as Iowa it is not too much to expect the very best of work.

PHYSICIAN'S LEISURE LIBRARY—DYSPEPSIA. By FRANK WOODBURY, M.D. Pp. 86. Detroit: Geo. S. Davis.

This is an excellent thesis reviewing the newest knowledge that has been acquired and that is pertinent to the subject. The book is not a systematic treatise but rather a fresh, interesting and

suggestive one. Both the symptomatology and treatment are discussed. Dr. Woodbury insists upon defining dyspepsia as a general disease which is due to poisoning of the system with the products of imperfect digestion and of gastric fermentation. In the closing chapter the subject of dietetics for dyspeptics is considered.

THE AMERICAN ARMAMENTARIUM CHIRURGICUM. Imperial 8vo. 1889. New York: George Tiemann & Co.

We are in receipt of a copy of this finely printed and handsomely bound volume. It contains 862 pages, 3,400 engravings, and descriptive matter of surgical instruments and appliances. The text is fuller than is usually found in trade catalogues, and is a credit to the enterprizing firm issuing it. The work is supplied to the profession at about the cost of the binding.

TRANSACTIONS OF THE AMERICAL SURGICAL ASSOCIATION. VOL. VII. Edited by J. EWING MEARS, M.D., recorder of the Association. Philadelphia, 1889.

The elegant typography and binding of this volume are fully justified by the valuable material which it contains. Fifteen articles fill the 217 pages of the book. Nine of these are chiefly or entirely devoted to the reporting of cases, and the remainder are for the most part systematic studies.

Dr. Stimson advocates the attempt to ligate separately the arteries in pedicles of abdominal growths instead of treating the stump as a whole.

An article on digital divulsion of the pylorus for cicatricial stenosis, by Dr. J. M. Barton, is instructive and timely.

Dr. McGraw, of Detroit, contributes to the history of gunshot wounds of the intestines.

Dr. Maurice H. Richardson reports upon the surgical treatment of gangrenous hernia in four cases that he observed.

The papers read before this Association are of a high order of merit, as would be expected from the *personnel* of the Society, and the present volume will be a valuable addition to the surgeon's library.

WOOD'S MEDICAL AND SURGICAL MONOGRAPHS. Vol. III, No. 3, Sept., 1889. William Wood & Co., publishers, New York.

This number contains the following excellent monographs: "Congestive Neurasthenia or Nerve Depression," by R. G. Whittle, M.D.; "The Art of Embalming," by Benj. Ward Richardson, M.D.; "The Etiology, Diagnosis and Treatment of Tuberculosis," by Dr. H. von Ziemssen; "Psycho-Therapeutics, or Treatment by Hypnotism," by Dr. C. Lloyd Tuckey; "Sexual Activity and the Critical Period in Man and Woman," by Dr. Louis DeSéré.

NECROLOGY.

Mr. George Buck.

The Chicago College of Pharmacy announces with regret the death of its President, Mr. George Buck, of the firm of Buck & Raynor.

Mr. Buck was born in Rochester, England, in 1827, and previous to coming to the United States had received a thorough training in pharmacy. Arriving in New York in the summer of 1855 he was engaged for J. H. Reid & Co., then the leading retail firm in Chicago. He remained with this firm as prescription clerk until 1859, when, with Mr. Raynor, also an employé of J. H. Reid & Co., he started in business near the corner of Clark and Washington streets, then a residence neighborhood. The early success and continued prosperity of the firm were due largely to the admitted competency and integrity of its members.

Mr. Buck was an early and consistent advocate of thorough pharmaceutical education, being one of the charter members of this college and having from the first taken a prominent part in its management. He was also prominent in the movement to secure for Illinois the enactment of a pharmacy law, his efforts in that direction dating from 1870, ten years before a law was finally secured.

He was the first president of the State Board of Pharmacy, and had been president of this college continuously since 1886.

He was widely known and universally respected, both by the profession and the people, as a man of high moral worth and sterling integrity, and his death is universally regretted.

Chicago, October 7, 1889.

Dr. James W. Kerr.

DR. JAMES W. KERR died at his residence in York, P., on Monday June 10, 1889, in the 76th year of his age. He was born in Lancaster County, Pa., and graduated in medicine at the University of Pennsylvania in 1840. He was an Assistant Surgeon in the late war, and a member of the American Medical Association since 1848. J. S. M.

Dr. Alexander R. Blair.

DR. ALEXANDER R. BLAIR died at his residence in York, Pa., on Thursday, July 16, 1889, in the 63d year of his age. He was born in Lancaster County, Pa., and received his degree of M.D. from the Jefferson Medical College, Philadelphia, in 1853. Dr. Kerr and Dr. Blair were the organizers of the York County Medical Society and members of it at their death. They were members of the State Medical Society. Dr. Blair joined the American Medical Association in 1858. He also served as Assistant Surgeon during the late war. J. S. M.

MISCELLANY.

PARIS EXHIBITION.—Wm. R. Warner & Co., the well-known manufacturing pharmacists of Philadelphia, were awarded a silver medal at the Paris World's Fair in recognition of the excellence of their pills and effervescent salts. This is the thirteenth World's Fair medal that Warner & Co. have received.

HEALTH IN MICHIGAN.—For the month of October, 1889, compared with the preceding month, the reports indicate that scarlet fever, puerperal fever, influenza, pneumonia, diphtheria, pleuritis and typhoid fever increased, and that cholera infantum, cholera morbus, dysentery, cerebro-spinal meningitis, diarrhœa and measles decreased in prevalence.

Compared with the preceding month, the temperature in the month of October, 1889, was much lower, the absolute humidity was considerably less, the relative humidity was slightly less, the day ozone and the night ozone were less.

Compared with the average for the month of October in the three years, 1886-88, inflammation of brain, diarrhœa, typhoid fever, pneumonia and puerperal fever were more prevalent, and cerebro-spinal meningitis, cholera infantum, membranous croup, diphtheria, erysipelas and measles were less prevalent in October, 1889.

For the month of October 1889, compared with the average of corresponding month in the three years 1886-'88, the temperature was lower, the absolute humidity, the relative humidity, and the day and night ozone were less.

Including reports by regular observers and others, diphtheria was reported present in Michigan in the month of October, 1889, at 63 places, scarlet fever at 54 places, typhoid fever at 113 places, and measles at 15 places.

Reports from all sources show diphtheria reported at 29 places more, scarlet fever at 34 places more, typhoid fever at 66 places more, and measles at 8 places more, in the month of October, 1889, than in the preceding month.

LETTERS RECEIVED.

Dr. T. D. Crothers, Hartford, Conn.; Dr. G. H. Gibson, Denver, Col.; Dr. J. W. Emmons, Sparta, Wis.; Lutz & Movius, New York; Codman & Shurtleff, Boston; I. Haldenstein, New York; S. R. Niles, Boston; C. N. Crittenton, Fairchild Bros. & Foster, New York; John H. Berry, Boston; Dr. A. F. Stifel, Wheeling, West Va.; Dr. James L. Taylor, Wheelersburg, O.; The Physicians', Dentists' and Druggists' Insurance Association, Chicago; Dr. E. Cutter, New York; Dr. M. C. Farrar, Fort Madison, Ia.; O. H. Merrill, Corrinna, Me.; Dr. A. L. Hummell, Philadelphia; Dr. W. E. Casselberry, Chicago; A. A. Marks, New York; Dr. H. Judd, Galesburg, Ill.; W. P. Cleary, New York; Dr. J. H. Maine, Fort Wayne, Ind.; J. H. Bates, New York; Dr. John N. Mackenzie, Baltimore, Md.; B. Westerman & Co., New York; Charles H. Phillips Chemical Co., New York; William R. Warner & Co., Philadelphia; Dr. Roeth, Boston; Gross Medical College, Denver, Col.; Dr. Joseph D. Couch, Somerville, Mass.; Dr. B. J. Loomis, Marshalltown, Ia.; Dr. L. Round, Dighton, Kan.; Dr. E. F. Brush, Mount Vernon, N. Y.; Dr. J. H. Williams, White Pigeon, Mich.; Dr. P. R. Hardie, Hampton, N. C.; Dr. E. M. Nelson, St. Louis, Mo.; Dr. F. B. Davidson, Fleetville, Pa.; Dr. Joseph A. White, Richmond, Va.; Dauchy & Co., New York; Dr. Charles C. Browning, New York; Dr. C. R. Ammerman, Colorado City, Col.; Dr. J. T. Wilson, Sherman, Tex.; E. B. Treat, New York; Dr. W. M. Harsha, Decatur, Ill.; Scott & Bowne, New York; Dr. Henry O. Marcy, Boston; Ira Perego & Co., New York; Dr. L. H. Dunning, Indianapolis, Ind.; The Guaranty Investment Co., New York; Armour & Co., Chicago; Dr. E. H. King, West Liberty, Ia.; Dr. Wm. Creighton Woodward, Philadelphia; Dr. A. G. Ochsner, Chicago; Thomas Leeming & Co., New York; Dr. Charles H. Haningan, Olympia, Wash.; W. H. Schieffelin & Co., New York; Henry G. de Forest, Long Island, N. Y.; Dr. W. B. Anderson, Rice's Crossing, Tex.; Dr. A. E. Prince, New York; Dr. Samuel P. Duffield, Detroit, Mich.; Dr. Irving D. Wiltrout, Hudson, Wis.; Lehn & Fink, New York; Dr. J. C. Buchanan, Winnsboro, S. C.; E. Steiger & Co., New York; Dr. Charles E. Davis, Fort Wayne, Ind.; Dr. Wm. D. Babcock, Los Angeles, Cal.; Dr. J. M. Barrier, Illawara, La.; Medical & Surgical Sanitarium, Battle Creek, Mich.

Official List of Changes in the Stations and Duties of Officers Serving in the Medical Department, U. S. Army, from November 9, 1889, to November 15, 1889.

Capt. C. N. B. Macauley, Asst. Surgeon, is granted leave of absence for one month, to take effect about the 29th inst. Par. 2, S. O. 166, Dept. of the Missouri, Ft. Leavenworth, Kan., November 8, 1889.

The following changes in the stations of medical officers serving in this Department are hereby made, viz.:

Capt. L. W. Crampton, Asst. Surgeon, from Ft. Lyon, Col., to Ft. Sheridan, Ill.

Capt. W. H. Corbusier, Asst. Surgeon, from Ft. Hays, Kan., to Ft. Lewis, Col.

First Lieut. F. J. Ives, Asst. Surgeon, from Ft. Lyon, Col., to Ft. Sill, I. T. Par. 3, S. O. 167, Hdqrs. Dept. of the Missouri, Ft. Leavenworth, Kan., November 9, 1889.

By direction of the Secretary of War, Capt. Louis M. Maus, Asst. Surgeon, having relinquished the leave of absence on surgeon's certificate of disability granted him in S. O. 249, October 25, 1889, from this office, will, upon being relieved from duty at Ft. Porter, N. Y., as directed in S. O. 242, October 17, 1889, from this office, proceed without delay to Ft. Stanton, N. M., and report in person to the commanding officer, Dept. of Arizona. Par. 8, S. O. 261, A. G. O., Hdqrs. of the Army, Washington, November 8, 1889.

By direction of the Secretary of War, the following assignments of officers of the Medical Department (recently appointed) are ordered:

First Lieut. Charles Willcox, Asst. Surgeon, will report to the commanding officer at Ft. Columbus, N. Y., for duty at that station.

First Lieut. Harlan E. McVay, Asst. Surgeon, now at Ft. Mackinac, Mich., will report in person to commanding officer of that post for duty.

First Lieut. Euclid B. Frick, Asst. Surgeon, will proceed from Philadelphia, Pa., to Ft. Keogh, Mont., for duty at that station.

Official List of Changes of Stations and Duties of Medical Officers of the U. S. Marine-Hospital Service, for the Three Weeks Ending November 9, 1889.

Surgeon George Purviance, granted leave of absence for twenty-one days. November 8, 1889.

Surgeon H. W. Austin, to inspect unserviceable property at St. Louis Marine-Hospital. November 4, 1889.

Surgeon J. M. Gassaway, relieved from duty at New Orleans, La.; to rejoin station at Cairo, Ill. October 23, 1889.

P. A. Surgeon C. E. Banks, granted leave of absence for thirty days. October 28, 1889.

Asst. Surgeon J. B. Stoner, ordered to Vineyard Haven, Mass., for temporary duty. November 6, 1889.

Asst. Surgeon A. W. Condict, ordered to Cairo, Ill., for temporary duty. November 4, 1889.

Asst. Surgeon G. M. Guitéras, ordered to Washington, D. C., for temporary duty. November 8, 1889.

Asst. Surgeon J. F. Groenevelt, ordered to New York, N. Y., for temporary duty. November 5, 1889.